

# THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. LXXI.

NEW YORK, SATURDAY, JULY 24, 1897.

No. 4.

## ORIGINAL ARTICLES.

### SUNSTROKE AS IT OCCURRED IN NEW YORK CITY DURING 1896.<sup>1</sup>

BY ALEXANDER LAMBERT, M.D.,

OF NEW YORK;

VISITING PHYSICIAN TO BELLEVUE HOSPITAL; ASSISTANT BACTERIOLOGIST TO THE NEW YORK HEALTH DEPARTMENT.

THE ten days from August 4 to August 14, 1896, will always be remembered as a period in which an extraordinary number of sunstrokes occurred in New York City. During the week ending August 15th, the total number of deaths in New York City was 1810, the largest ever known since the Bureau of Vital Statistics was established; 648 of these were reported as deaths due to sunstroke. The death-rate for the two preceding and two succeeding weeks was about normal for that season of the year, showing for this week that the heat was the disturbing cause which produced this sudden and frightful increase of deaths. This is shown by the following figures:

Deaths from all causes for the week ending August 1st,	803.
" " " " " " " " 8th,	809.
" " " " " " " " 15th,	1810.
" " " " " " " " 22d,	822.
" " " " " " " " 29th,	736.

The deaths from sunstroke for the year ran as follows: April, 1 death, a stoker in the Twenty-sixth street cable-car power-house; May, 4 deaths; June, 5 deaths; July, 30 deaths; August, 725 deaths. Total, 765.

For the different weeks of August, the death-rate from sunstroke was as follows:

Week ending August 1st	- - - - -	5 deaths.
Week ending August 8th	- - - - -	11 deaths.
Week ending August 15th	- - - - -	648 deaths.
Week ending August 22d	- - - - -	66 deaths.
Week ending August 29th	- - - - -	1 death.

Deducting these deaths from the total deaths from all causes we see that the death-rate from usual causes was not abnormal, except during the week ending August 15th, when the heat would again account for the increase, as its effects on chronic diseases in their last stages would hurry the fatal ending. The deaths from diarrheal diseases, which usually increase with high temperatures, were not abnormally high even during the week ending August 15th. This leads us to examine more closely the various factors which made up the sum total of the weather for the ten days of August (4th to 14th) to

ascertain what were the causes which produced such an unusual number of sunstrokes.

Dr. Daniel Draper of the Central Park Observatory has kindly furnished the writer with the following facts concerning the weather for the month of August, 1896: The mean hourly humidity for the whole month of August was 73.18, 100 being saturation. From August 4th to August 13th inclusive, the hourly humidity was more often below this mean than above it, this being especially true for the hours between 10 A.M. and 11 P.M., when most of the sunstrokes occurred. The high temperature, of course, was the main factor, ranging, as it did, in the shade at the Central Park Observatory fifty-three feet above the street, from 72° to 98° F. For a few hours in the early morning, *i.e.*, from 1 to 8 A.M., on August 4th, 5th, 7th, 8th, and 13th, it did fall below 80° F., but for five consecutive twenty-four hours, August 7th to 12th, except 3 to 5 A.M. August 8th, the temperature ranged from 80° to 98° F., the mean temperature being 86.7° F., that is, 10.6° F. higher than the monthly mean, and 12.8° F. higher than the mean of the other twenty-one days of August. Fortunately, the hottest day was a Sunday, August 9th, or the death-rate would have been even greater than it was. This represents only the temperature in the Central Park Observatory, which was several degrees cooler than in the streets and tenements. The temperature in the sun during these days accurately shows the temperature of the streets. During the working hours of the day, from 8 to 5 P.M., this temperature averaged 119.3°

## DESCRIPTION OF PLATE.

1. Normal cell from the anterior horn of the spinal cord, stained by Nissl's method. (Van Gieson.)
2. Normal cell from the anterior horn of the spinal cord. (Van Gieson.)
3. Cells from the anterior horn of the spinal cord in insolation, showing diminution of chromophilic plaques and changes in their shape and position. (Van Gieson.)
4. Anterior horn cell from the spinal cord in insolation, showing chromophilic plaques broken down into fine dust. Nissl and eosin staining. (Van Gieson.)
5. Anterior horn cell from the spinal cord in insolation, showing entire absence of chromophilic plaques, and changes in nuclear membrane. Nissl and eosin staining. (Van Gieson.)
6. Normal Purkinje's cells from the cerebellum. Nissl staining. (Van Gieson.)
7. Purkinje's cells from the cerebellum in insolation, showing almost entire absence of chromophilic plaques, and changes in nuclear membrane and deeply stained nucleus. (Van Gieson.)
8. Large normal motor cell from the cerebral cortex, and small normal sensory cell. Nissl staining. (Van Gieson.)
9. Degenerated cortical cells in insolation, showing almost entire absence of chromophilic plaques and deeply stained nucleus. Nissl and eosin stain. (Van Gieson.)

<sup>1</sup> Read before the New York Academy of Medicine, May 20, 1897.

F., ranging from 94° to 137° F., and after sunset the temperature fell but little below 90° F. till nearly midnight. With the exception of two slight showers between 11 and 12 P.M., on August 7th and 9th, no rain fell to cool the heated stones and brick walls. The prevailing winds were land breezes coming from the north and west, and were scarcely perceptible, moving, as a rule, less than six miles an hour, and measuring in force on an average but one-fourth pound per square foot during the middle of the day, and none during the greater part of the night hours. To sum up the causes of the sunstrokes, then, we have the excessive and unusually prolonged high temperature, a high degree of humidity which, however, is usual for this climate, together with the absence of any cooling breezes, making a hot, sultry, lifeless atmosphere, the main unusual features seeming to be the continuous height of the temperature and lack of movement of the air.

This is in accordance with previous experience, for sunstrokes are much less common in dry, hot climates than in more moist climates with lower temperatures, *e.g.*, in India the dry, hot winds are better borne than the moist, warm winds, even with lower temperatures. The dry, hot winds cause a more rapid evaporation of the perspiration and a cooling of the body, while damp air diminishes evaporation and the refrigerating processes. A lack of movement in the air, with a high temperature and even a moderately high humidity, would have a similar effect and prevent cooling. This could be withstood for a certain length of time, but if long continued, as it was last summer, a time would come when the heat-regulating mechanism of the body would lose its equilibrium, and, perspiration ceasing, the danger to life would soon become imminent. As has long been known, man, of all animals, can withstand the greatest variations in temperature for the greatest length of time; and a few days of excessive heat in New York has not usually caused a great number of sunstrokes, as the resistance of the body is not overcome, except in those whose equilibrium has been weakened by illness, great exhaustion, or dissipation. Previous to August 9th there are records of but fifty sunstrokes, while from August 9th to 14th there were 739, and but fifteen more on August 14th and 15th. This total of 805 cases is from the records of Bellevue, Roosevelt, Presbyterian, New York, Hudson Street, St. Vincent's, and the J. Hood Wright Hospitals; and it is due to the courtesy of Drs. F. W. Jackson, Austin Flint, Jr., W. B. James, J. P. Thornley, H. P. Loomis, L. A. Conner, Joseph O'Dwyer, and G. S. Knickerbocker that I have been able to gather together so many, and

I desire to express my sincere acknowledgments to the above-named gentlemen.

Any cause which lessens the resistance of the body to external influences may be said to predispose to sunstroke. Excesses of all kinds, such as over-fatigue or alcoholism, either chronic alcoholism or even a single alcoholic excess, predispose to it. The large number of cases in which there was a history of alcoholism, either moderate or excessive, is a most striking feature in the cases collected. The great majority of the patients were alcoholics. Clinically, the cases divide themselves into three classes: First, heat prostration; second, asphyxial or milder form of sunstroke; and third, hyperpyrexial form of sunstroke. Of the first class, there were 247 cases; these patients did not lose consciousness and did not have a rise of temperature up to 105° F.; some even had subnormal temperature; all recovered. Of the second class or milder form of sunstroke, the so-called asphyxial cases, there were 38, and all of the patients recovered. These lost consciousness, but the temperature did not rise to 105° F., and there was often a marked predominance of nervous symptoms. Of the hyperpyrexial cases, there were 520, with 132 deaths. A few of these patients retained consciousness, but all had a temperature of 105° F. or over. This division may seem arbitrary and open to criticism, but as we study the three classes in detail, we shall see that, while the difference is a matter of degree and not of kind, the distinctive and prominent symptoms of each class justify such a classification.

The majority of the sunstrokes occurred between 2 and 5 P.M. and between 7 and 10 P.M. The nationalities were most diverse; Americans, English, Irish, Scotch, Swedes, Norwegians, French, Russians, Austrians, Italians, Bohemians, Poles, Germans, and Swiss were represented. The histories show no case of a negro being overcome. The occupations were equally varied and comprised all kinds requiring severe manual labor, and also those which did not require it, such as laborers of all kinds and trades, clerks, policemen, salesmen, conductors, etc. Among the women, cooks and laundresses predominated. Direct exposure to the sun was not necessary, although such exposure did cause the largest number of attacks. Among those who were stricken while at work, the greatest number were brought in from 2 to 5 P.M. After work had ceased for the day and the individuals had had time to go home and eat supper, usually with beer, the increased oxidation and heat produced by food added to the fatigue of the day, and the still hot, vitiated atmosphere of the tenements caused the occurrence of a large number of cases between 7 and 9

P.M. In the middle of the night the bakers and firemen would succumb, and, together with those who had been unconscious for some hours, would be brought to the hospitals, thus keeping up the steady stream of patients.

*Heat Prostrations.*—The prodromal symptoms of the heat prostrations usually were severe headache, dizziness, and pain in the back and legs, or epigastrium, and sometimes numbness and tingling of the hands and feet. In some cases these symptoms came on suddenly, while in others they were present for twenty-four hours or three or four days before the patient came to the hospital. In some cases there was also diarrhea or constipation, with nausea and vomiting, and great thirst. The patients, as a rule, however, could sleep well at night and would wake more or less refreshed, but after getting up and going to work the symptoms would again come on and they be forced to stop. In only a few instances did the sweating cease. On admission, these patients were conscious, usually with intense headache, either temporal or occipital, and they seemed dazed, the prostration often being extremely marked. The tongue was usually clean and normal in appearance though more often moist and more or less heavily coated. A few patients showed a distinct jaundice of the whites of the eyes. The temperature in a few cases was subnormal— $97^{\circ}$  F.; the rest had more or less distinct rise of temperature, from  $99.2^{\circ}$  to  $104.8^{\circ}$  F. In the patients with a subnormal temperature, or with one of  $99^{\circ}$  or  $100^{\circ}$  F., the temperature in a few hours gradually came to normal and remained so. After from five to twenty-four hours' rest these went out feeling well. Some others, with a temperature of  $100^{\circ}$  to  $102^{\circ}$  F., after twelve, twenty-four, or forty hours went out well, with normal temperature and pulse. The majority of these patients, having a temperature of  $100^{\circ}$  to  $104^{\circ}$  F., had a slight thermic fever ranging from  $101^{\circ}$  to  $103^{\circ}$  or from  $99^{\circ}$  to  $101^{\circ}$ , or  $102^{\circ}$  F. for two, three or five days, and in one case for fifteen days. The pulse varied from normal to 140. The frequency did not seem to be in proportion to the height of the temperature, but was more dependent on the condition of nervous exhaustion. In the case of two patients in whom the temperature was  $102.2^{\circ}$  F., in one the pulse was 72 and in the other 130. In two with a temperature of  $103.2^{\circ}$  F., in one the pulse was 84 and in the other 132. In the majority of cases the pulse ranged from 84 to 96. Respirations, as a rule, were slightly increased, usually being from 24 to 28. In some cases they were about normal; in others, 36 to 40 per minute. Of the 72 histories of this class, 64 are of men and 8 of women. This class of patients was cared for in the hospitals,

usually without any special record being kept of each case; hence, of the 247 cases reported, there are but 72 histories.

Of the asphyxial form of sunstroke, there are but 38 histories, with no deaths in which the diagnosis of the so-called asphyxial form was positive. Probably some of the cases of heat prostration unaccompanied by histories may have been asphyxial sunstrokes, but there is no record to show it. Of the 224 cases of heat-stroke at Bellevue, there were but 18 of the asphyxial type. It is evident, therefore, that this second group is by far the least common form. The premonitory symptoms of this form of sunstroke are varied. Sometimes there were no premonitions and the patients suddenly lost consciousness; sometimes this was immediately preceded by sudden dyspnea, or dizziness, or chromatopsia. In others, there were chills and sweating, with a feeling of fever, diarrhea, and severe vomiting, or marked and persistent constipation. In some patients these symptoms came on soon after a meal; in others, while at work in the sun. One patient, while walking quietly in the street at 11 P.M., suddenly, without prodromal symptoms, fell unconscious. In some there was a feeling of burning in the head, or headache, or feeling of "pins and needles" in the head. On admission, these patients were unconscious, at times moaning and grunting, with convulsive movements, or they had been unconscious and were partially conscious, with a most intense headache, either temporal, occipital, or frontal. The tongue was white and coated; sometimes there was a petechial rash on the body, the skin was hot, dry, or covered with sweat, the pupils normal or dilated and reacting to light, and the respirations shallow. The unconsciousness lasted till after a bath or for some hours, with delirium; one patient did not regain consciousness for twenty-four hours.

In a large majority of these patients the temperature varied between  $98^{\circ}$  and  $101^{\circ}$  F., while in five it was subnormal— $96^{\circ}$ ,  $97.6^{\circ}$ ,  $97.8^{\circ}$  F. In others, there was a rise of temperature to  $102^{\circ}$  or  $104^{\circ}$  F., these also had a slight thermic fever for three or four days, or a week. In a few cases in which the temperature on admission was  $100^{\circ}$  F., it afterward rose to  $104^{\circ}$  F., and then fell to normal by lysis in from three to five days. The pulse was not as variable, or, usually, as frequent as in the heat prostrations. With the subnormal temperatures the pulse was from 68 to 104; with the temperatures of  $98^{\circ}$  to  $101^{\circ}$  F., the pulse in one case was 60, while in the others it ranged from 72 to 100. In the case of the patients with higher temperatures it ran from 100 to 132, while the respirations, though frequent, shallow and quiet,



ranged from twenty to forty per minute. There was one patient who deserves special mention. Though conscious on admission, with a temperature of 99.8° F., a pulse of 108, and respirations 24, he soon became delirious, and when the thermometer was inserted into the rectum he jumped out of bed and out of the window. He afterward said he thought that the thermometer was about to explode and kill him. After being brought back to the ward uninjured, the thermometer being taken from him, he became quiet, but the next morning when he was apparently quiet and rational, a drinking cup was given him. This he seized and broke on the side of his iron bedstead, and endeavored to cut open his chest with a jagged fragment and kill himself. He remained insane for a week, then cleared up entirely. Thirty-six hours after his admission his temperature gradually rose to 104.8° F., and his pulse to 140. After a hot bath and a cathartic, both temperature and pulse fell, and after eleven days he made a good recovery. In this class there were thirty-three males and five females. The blood of some of these patients showed changes, which will be spoken of later. The ordinary urinary analyses showed no more changes than is usually found in an equal number of alcoholic and normal individuals.

The third, or hyperpyrexial, class of patients comprised the true cases of intense sunstroke. There are 520 cases, with 132 deaths, 492 being men, and 28 women. Of these, there are 248 history records, with 80 deaths. Of the 52 remaining deaths, many of the patients were moribund and died in the ambulance or so soon after admission that no record was kept in the hospital books beyond the cause of death. It is to be regretted, of course, that of the 272 patients without histories who recovered, the histories were either lost in the hurry and confusion or were not taken by the overworked and really worn-out house staffs. The wonder is that so many excellent histories were so accurately taken, and it speaks well for the enthusiasm and conscientious devotion to their work of the various internes of the hospitals in New York city. It was often a physical impossibility to do all that seemed necessary, and the patients received all the attention and the records were neglected.

In studying the hyperpyrexial class, it is noticeable that the prodromal symptoms, when present, were often more prolonged than in the other two classes, having lasted from four to five or seven days, though there are more histories in which there were no prodromal symptoms at all. The usual prodromes were physical weakness, anorexia, often complete, great irritability and restlessness, insomnia for three or four days, nausea and diarrhea or constipation.

One patient had marked increase of micturition for several days. Just before consciousness was lost, sweating ceased, and there was a sensation of intense heat all through the body or only in the head, with a feeling as if the head would burst open, and as if the eyes were bulging outward. In some cases there was dimness of vision, or everything seemed blurred; in others there was chromatopsia, and all objects were blue colored or red, yellow, or white, blue predominating. One patient saw innumerable yellow flames. Some patients said everything appeared black. Three patients complained of cramps and involuntary contractions of the muscles of the body and extremities; one that his feet were beyond control. These prodromal symptoms were more common in patients in whom the temperature did not rise above 108° F. than in those with higher temperatures. Those who had the higher temperatures either had no prodromes or remembered but little more than not feeling well, with anorexia, insomnia, and vertigo, for a few days, sometimes with chromatopsia just before they lost consciousness, and their next conscious realization was after the bath in the hospital. In several instances the friends said that the patient had kept at work long after he had ceased to answer questions or had noticed anyone or anything about him. One patient started for home at 10 A.M., returned to his work, changed his clothes, again left for home, and after arriving there, took a bath and went out again. He was picked up in the street unconscious at 5 P.M. and brought to the hospital, and did not regain consciousness till 2 A.M., or nine hours after his ice bath. He remembered nothing except leaving for home at 10 A.M. Another took a car and started for the hospital but stopped at his home, and later went out and brought in a pail of beer. He was brought to the hospital and remembered nothing after first starting for the beer. Another remembered leaving Hoboken on the Christopher street ferry-boat but nothing more, though he was picked up at Fifth street and East river, over two miles from where he had landed. Although apparently unconscious of their surroundings, these patients were able to perform complex acts in an apparently voluntary and rational manner.

The symptoms on admission varied somewhat. In every instance in which the consciousness or unconsciousness of the patients is mentioned, and in which the temperature was 110° F., or over, coma was complete. In one patient whose temperature was 109° F. consciousness was sufficiently retained so that he could be partially roused. With temperatures of 108° to 109° F., 1 patient was conscious, 3 partially so, and 30 unconscious; with temperatures 107° to 108° F., 6 were conscious and 21 unconscious;



with temperatures  $106^{\circ}$  to  $107^{\circ}$  F., 8 were conscious and 21 unconscious; with temperatures of  $105^{\circ}$  to  $106^{\circ}$  F., 11 were conscious and 11 unconscious. Those that were conscious complained of intense heat and headache. One patient walked into the hospital, with a temperature of  $105^{\circ}$  F., asked for the cold bath, and helped himself into it and out of it.

The unconscious patients presented a striking picture. Their skins were dry, hot, and flushed, or cool, pale, and livid or cyanotic, with a clammy perspiration, their eyes suffused and half open, or staring and filmy. The pupils were dilated, contracted or normal, or unevenly dilated or contracted; sometimes they reacted to light, sometimes they would not react. In addition, their mouths were open, with lower jaw twitching convulsively, and their respirations came in short gasps, with either a noisy, gasping inspiration and quiet expiration, or a quiet inspiration and explosive expiration, each expiration at times being accompanied by a piteous moan or groan. Sometimes they lay absolutely limp and flaccid, or with their muscles twitching convulsively or even in general convulsions. Often they were wildly delirious and fought and struggled furiously. The pulse was rapid, very frequent, and small and thready, or full and strong, with throbbing carotids; in the worst cases, they were pulseless. In many cases there was a petechial rash on the body and extremities, or only on the body. The patients emitted a peculiar, disagreeable odor quite distinct from that of fecal matter, though the discharges of the involuntary defecations and urinations, which almost always occurred, were of the most offensive character.

The temperature of the patients on admission, in the 246 cases in which it is mentioned, was as follows:

$117.8^{\circ}$ F.	1 died; New York Hospital	-	-	Total	1
$115^{\circ}$ F.	0 died; 1 recovered, Presbyterian Hospital	-	-	"	1
$112-113^{\circ}$ F.	5 died; 3 recovered	-	-	"	8
$111-112^{\circ}$ F.	3 died; 2 recovered	-	-	"	5
$110-111^{\circ}$ F.	23 died; 22 recovered	-	-	"	45
$109-110^{\circ}$ F.	20 died; 38 recovered	-	-	"	58
$108-109^{\circ}$ F.	15 died; 26 recovered	-	-	"	41
$107-108^{\circ}$ F.	7 died; 20 recovered	-	-	"	27
$106-107^{\circ}$ F.	3 died; 29 recovered	-	-	"	32
$105-106^{\circ}$ F.	1 died; 27 recovered	-	-	"	28
	78	168			246

The pulse, on admission, showed no regular variation with the temperature, for from  $105.4^{\circ}$  to  $112^{\circ}$  F. it had the same frequency and varied with all degrees of temperature, e.g., temperature  $105.4^{\circ}$  F., pulse 150, respiration 50; temperature  $105.4^{\circ}$  F., pulse 100, respiration 24; temperature  $110^{\circ}$  F., pulse 90, respiration 38; temperature  $110^{\circ}$  F., pulse 150, respiration 50. The quality of the pulse was the best indication of the patient's condition, as sometimes a pulse of 144 would be of good quality and strong, or feeble and small. The frequency and

quality bore no regular relation to the temperature or respirations.

The following table shows this more in detail:

Temperature.	Pulse.	Respirations.	Cases.
$117.8^{\circ}$ F.	180	64	1
$112^{\circ}$ F.	160	40	1
$110^{\circ}$ F.	90 to 150	16 to 50	12
$109^{\circ}$ F.	116 to 160	30 to 50	11
$108^{\circ}$ F.	112 to 160	20 to 44	9
$107^{\circ}$ F.	100 to 162	18 to 52	8
$106^{\circ}$ F.	96 to 160	18 to 50	16
$105^{\circ}$ F.	96 to 150	16 to 50	10
			Total, 68

The averages of the above table are as follows:

Temperature.	Pulse.	Respirations.
$110^{\circ}$ F.	132.3	31.6
$109^{\circ}$ F.	151.2	38
$108^{\circ}$ F.	138	32.6
$107^{\circ}$ F.	128.8	34.6
$106^{\circ}$ F.	135.6	30.9
$105^{\circ}$ F.	111.3	29.1

During the administration of the bath or cold pack, or within an hour afterward, about one-half of the patients became conscious, and usually remained so. Others did not become conscious after the first bath, but after their temperature rose again and a second bath was given, consciousness returned and they remained rational. Many patients did not regain consciousness until the day following the attack, some not until three or five days, and one not for ten days, and then recovered. Many with a temperature above  $108^{\circ}$  F. did not regain consciousness at all, and though the temperature came down, the pulse remained frequent, dyspnea and cyanosis often being marked, and such finally died. These patients usually died during the first twenty-four hours after admission; some lived forty-eight hours or more, while one lived six days. There were several patients who became conscious immediately after the bath, or after a few hours, and remained so from four to nine hours or more, often from one to two days; then they again became unconscious, with marked delirium, and remained in this state from two to seven days, and then recovered. A few of these, however, died during the delirium. The patients who came into the hospital in convulsions usually continued to have these even after their bath. It was commonly a tonic spasm, with intermittent clonic convulsions general in character, though sometimes confined to the arms or legs or head and neck. One patient had left-sided convulsions of the face, arm, and leg, and these continued for some hours until he died. A marked rigidity of the muscles without convulsions was not uncommon. These convulsive seizures were very common, and sometimes were controlled by a second bath, but not usually so. At times they would disappear and return twenty-four hours later, or even two or three days after the patient had become conscious and quiet. A few patients died suddenly in

a convulsion twenty-four hours after consciousness had been regained.

The fall of temperature after the bath was followed in the case of a majority of the patients by one or more secondary rises. This rise occurred in all in whom the initial temperature was over  $110^{\circ}$  F., if they did not die with the fall of temperature which accompanied the bath or cold pack. In a few patients, with a temperature from  $107^{\circ}$  to  $110^{\circ}$  F., there was no marked secondary rise above normal, and they went on to an uninterrupted recovery. In patients with a temperature of  $105^{\circ}$  to  $107^{\circ}$  F. this was a common occurrence. In most patients who did well, one or two slight secondary rises was the rule, the two rises being less common than the single rise. Some patients recovered, though their fever curve showed three to four, and even five, marked rises. Those patients who succumbed usually did so upon the first or second rise, or failed to react after the two or three baths given to reduce these exacerbations. Some, however, had three, four, five, or more secondary rises before they died. One patient, with an initial temperature of  $108^{\circ}$  F., had nine exacerbations up to  $104^{\circ}$  or  $105^{\circ}$  during forty-eight hours before he died.

The first rise occurred most frequently three to six hours after the first bath, next in frequency after twelve to eighteen hours. In bad cases the rise often occurred within the first three hours, sometimes within an hour. The second secondary rise occurred most often twenty-four or thirty-six hours after the bath, next often from twelve to eighteen hours afterward. In bad cases this second rise would occur in two or three hours after the first secondary rise, and from three to eight hours after admission; that is a majority of the patients required the taking of active measures to reduce their temperature three times during the first twenty-four hours after admission. The third rise occurred in the ninth or twelfth hour, or during the second and third day after admission, and the fourth and fifth rises during the second, third, or fourth days. Many patients had more or less of a thermic fever, which was not high enough to require interference, the temperature ranging from  $103^{\circ}$  to  $101^{\circ}$  or  $100^{\circ}$  F., and lasting from three to five or from seven to ten days, and in some cases even two or three weeks. In some cases the fever averaged a little higher and the patients required sponge baths. The pulse, after the temperature had fallen, improved in the patients who recovered, both in its force and frequency. As a rule, it fell to normal more slowly than the temperature. After a few days, however, even if there was a moderate thermic fever, the pulse usually averaged about 80 or 90. In the fatal or very severe cases the pulse remained rapid

and frequent, was apt to be thready, and was usually feeble and soft.

The examination of the blood showed a decided leucocytosis. The red cells were distorted and sometimes apparently shrunken, and the leucocytes contained pigment. The hemoglobin color-test in the case of twelve patients showed 85 to 125 per cent., and averaged 100 per cent. This is far above the average, and was due to the free hemoglobin in the blood from destruction of the red cells. The subsequent anemia in nearly all the patients was very marked.

Some patients had bloody expectoration during the administration of the bath and for awhile afterward; a few had bloody stools.

Retention of the urine was not an uncommon symptom. The specific gravity of the urine of the first twenty-four hours seemed to be lower than normal and to contain a lessened amount of urea. In seventeen samples the amount of urea was above normal in two, normal in one, and in fourteen below normal. The urine of the same patients, from five to ten days later, was usually of higher specific gravity, and contained the normal amount of urea. These few observations do not justify any sweeping conclusions, but the facts were sufficiently noticeable to be striking. Often the urine was normal; often it was of low specific gravity, due to chronic Bright's disease, but in these cases it remained the same after recovery from the attack.

The fatal complications observed were meningitis, pneumonia (one with sacculated empyema), and acute exacerbations of chronic kidney disease, which gave rise to suppression of the urine or to dyspneic attacks, with emaciation. The cause of death in most cases was simultaneous failure of the respiratory and cardiac centers. In some instances a sudden rigidity of the respiratory muscles, and in fact of the whole muscular system, caused suffocation. This rigidity was so intense that artificial respiration was impossible. When respiration ceased before the heart, and artificial respiration could be performed for one-half to one hour, it sometimes saved the patient. In other patients the heart stopped first and nothing would stimulate it.

The immediate sequelæ of sunstroke were headache, extreme weakness and malaise, dizziness, soreness in the muscles and bones, and frequently numbness and tingling in the hands and feet. This tingling lasted for days, and in some cases for two or three weeks; in one case it was present for two or three months. The anemia was usually extremely marked. Two patients developed incoordination of the extremities, which has remained permanent. One patient had attacks of vertigo and fainting,

which confined him to bed for two months. At present he has complete atrophy of the right transversus pollicis muscle and loss of power in the flexor muscles of the right forearm, his hand being so weak that he can scarcely hold a pen. Three patients developed delusional insanity; two of these recovered and were apparently normal after from six to eight weeks, while the other left the hospital still suffering with delusions.

Dr. R. M. Daley of the Bellevue Hospital staff has endeavored to trace for the writer all the patients that were treated last summer for heat-stroke at Bellevue Hospital. He has been able to obtain the following facts: Number of patients found nine months after the sunstroke occurred, 73. There were no sequelæ in 42. Three had become insane, and 13 suffered from attacks of dizziness and were more sensitive to heat. Five had frequent severe headaches, which they had not had previously. Chromatopsia on hot days was present in 1, and gastritis in 1. One patient had a changed disposition; formerly having been good-natured, even when drunk, he is now ugly and irritable, especially when drinking. One patient for a period of two months felt a numbness of the whole body, though he could easily feel a pin prick, etc. Numbness and weakness of the hands and feet, which persisted for three months, occurred in two cases, and the same conditions persisted after nine months in another. One patient had an increased number of epileptic attacks since the occurrence of the sunstroke and was re-admitted to the hospital six weeks after his sunstroke, with polyuria and glycosuria, which had appeared since his attack. Dr. Van Gieson has given me the report of one of the sunstroke cases from the New York Hospital. Within two months after the patient's seizure she developed multiple neuritis and dementia and two months later died with dementia. One patient insists that his eyesight has been much improved since he suffered the sunstroke.

There was a peculiar asthenic condition noticed in a few patients which deserves special mention. Among the Bellevue Hospital records there are five such histories occurring in the services of Dr. Jackson and the writer. While similar cases probably occurred in other hospitals, the records at the writer's disposal do not mention them. Four of these patients had an initial temperature of 106.2°, 106.4°, 108.2°, and 109° F., respectively, that of the fifth not having been recorded. They all reacted well after the bath and became conscious, either immediately or within four hours, and remained rational for twenty-four hours. They then became delirious, three of them wildly so at first, fighting everyone who came near them, and then sank into a low,

muttering delirium. Two developed low delirium without having passed through the previous wild stage. Their skin was dry and harsh, their emaciation rapid and extreme; and they had incontinence of urine and feces. Their half-closed eyes, hollow, sunken cheeks and extreme general emaciation, in a few days presented a striking picture compared with their well-nourished appearance on admission. During the wild delirium their temperature rose to a high point, frequently equaling the initial rise, with a pulse ranging from 120 to 150, but at first, during the stage of low delirium, the temperature of all five patients was from 99° to 102° F., and the pulse from 80 to 100. Finally, the pulse again became frequent (120 to 130), and the temperature, in three cases, rose ante-mortem, to 106° and to 110° F. In two cases the temperature did not rise. These five patients died ten, three, six, eleven, and eighteen days after the seizure. They were all markedly alcoholic, and probably this factor had a controlling influence in the course of the disease. In these cases, however, during the wild delirium, the temperature rose to a much higher point than is usually observed in delirium tremens, and the extreme emaciation was more rapid and marked than is usual in the low, muttering delirium met with in the ordinary cases of so-called alcoholic "wet brains."

Another sequel alluded to, that of dryness and harshness of the skin, was present in a great many of the cases of hyperpyrexia. Usually two or three days after the sunstroke the skin over the whole body became dry and harsh and finally peeled off in fine particles or in large flakes.

Ecchymoses were common in the patients who bruised themselves during their delirium or during their convulsions. These ecchymoses were much more extensive than is usual in the case of ordinary bruises. Hypodermic injections frequently caused ecchymosis, and if Hoffman's anodyne or aromatic spirits of ammonia had been used, small abscesses often followed. These healed rapidly under the application of ichthyol.

It is interesting to note that six patients gave a history of having had a heat-stroke some years previous to the one during August, 1896. In one instance this had occurred twenty-eight years before, in one, five years, and in four, "several years." All these patients recovered from the more recent attack. Six patients were re-admitted to the same or to different hospitals upon the recurrence of sunstroke within ten days, and while four of these recovered, two died.

The treatment of sunstroke at the various hospitals during August, 1896, differed so much in essential details that we have an opportunity of judging as to which appears to be the best. This is especially



true, as all of the hospitals treated at the same time exactly the same class of patients and the same types of the disease. The heat prostrations were treated alike in all of the hospitals. The patients were put to bed, and if necessary given a cool sponge bath, and phenacetin or some such drug for the headache. This, with rest, was all that they required. Sometimes an ice-cap applied to the head gave great relief. The asphyxial class of patients were given tub baths at 60° F., or sponge baths, or if the coma and nervous symptoms demanded it, they were put for a few minutes into an ice bath and thoroughly rubbed, being taken out when the body temperature fell a degree or two. They were stimulated with drugs when necessary, but for the most part they required little more than rest and quiet and the stimulation of a cool bath. But it is in the treatment of the hyperpyrexial cases that the true test of sunstroke treatment is to be made. There is no disease which demands more immediate and active treatment, or which will respond more satisfactorily when proper measures are instituted. Hydrotherapy in some form was tried in all cases. It differed in the method of application and the temperature of the water employed.

The records of mortality at the various hospitals furnish a fair estimate of the efficacy of the different methods of treatment. The mortality among the patients treated with ice baths, the bath being continued until the body temperature had fallen to about 103° or 102° F., varied in the different hospitals from 18 to 27.5 per cent. When the ice pack was used in some cases instead of the ice baths, the mortality was 25.5 per cent. When the ice bath was given for ten minutes, irrespective of the point to which the temperature fell so long as it remained above a safe limit, the mortality was 40 per cent.

Among the patients treated by means of baths ranging in temperature from 50° to 75° F., the mortality was 33⅓ per cent.; when the baths were given at a temperature of from 90° to 110° F. and reduced in from fifteen to twenty minutes to 72° F., as was done at the Brooklyn Homeopathic Hospital, the results do not seem to have been as favorable as with the cold baths. Judging from a published article,<sup>1</sup> at this hospital there were 49 heat cases of all kinds treated; 17 of the patients were unconscious, and 7 were wildly delirious; nine died, 2 living for only five and six minutes respectively after admission. It seems fair to say, therefore, either that all of the 7 patients who exhibited severe symptoms died, or else that in the case of 17 patients who were unconscious, with high or moderately high temperatures, there were 7 deaths, or a mortality of 41.17 per cent.

<sup>1</sup> *The Chironian*, February 1, 1897, p. 98.

Among the patients treated with a needle spray from a hose attached to a cold-water faucet, the mortality was 11.5 per cent. In St. Vincent's Hospital, in which the treatment was that of cold packs followed by hot packs, among 197 hyperpyrexial cases the death-rate was 12, or 6 per cent. Counting in the 8 patients who died a week or more later, the mortality was but 10.15 per cent. The death-rate of sunstrokes as given in Quain's "Dictionary of Medicine" is from 41 to 50 per cent. In the 926 cases reported by Aiken,<sup>1</sup> the mortality was 421, or 56.62 per cent. Of the 520 cases of hyperpyrexial sunstroke, with 132 deaths, recorded in this paper, the mortality was 25.38 per cent. Among those patients who lived long enough to be treated, the mortality was 25.12 per cent. The treatment employed in the various hospitals of New York City, therefore, certainly gave satisfactory results. If we consider the various methods more in detail we can arrive at a fair judgment of which method of treatment promises the best results.

By an ice bath is meant a tub bath in which ice, crushed into moderately sized pieces, is constantly kept floating. The temperature of the bath is about 40° F. This method of treatment has its advantages and its disadvantages: The advantages are that it is a sure and rapidly effective means of reducing the body temperature and is a powerful stimulant to the nervous system. The ice should be removed from the tub before the patient is placed in the water, and after a minute or two from half a bushel to a bushel of cracked ice should be poured in; or, if there is only time in which to prepare the bath, the patient should be placed in the water and the ice be added. If the patient is lowered into a bath with the ice remaining in it, especially if it has been standing for some time, the shock is too great, and some patients as soon as they touch the ice become rigid, respiration ceases, and they cannot be revived. This, fortunately, is rare, but it does occur, and should be guarded against. This rigidity does not occur if the ice is added after the patient is in the water.

The head of the patient during the bath should be supported and constantly bathed with the ice water, care, of course, being taken to keep the water out of his eyes and face. Incessant and vigorous rubbing of every portion of the body is an absolute necessity. This must be kept up during every moment the patient is in the bath. The rectal temperature should be taken every minute or two, and when it falls to 104° or 103° F. he should be lifted out, placed in a blanket, rubbed dry, and allowed to rest. Stimulants should be given as the pulse may indicate. It was noticed that if the temperature was allowed to fall

<sup>1</sup> Aiken's "System of Medicine," vol. ii.

below 102.5° F. during the bath, it was apt to continue down to a subnormal point, and depression, instead of stimulation, was the result. After a subnormal temperature, the second rise was apt to occur sooner and be more intense than when the temperature had fallen to normal. When such baths were properly given, the pale and livid or cyanotic color of the skin soon changed to a bright red, and the pulse, and especially the respiration, improved, and sometimes consciousness returned even in the bath itself.

The length of time necessary to reduce the temperature varied so much with all temperatures that no regular duration can be given; the time was usually judged by the fall of the temperature, though a few patients did not bear the bath well, and were taken out before the temperature was reduced to 104° F. When the bath was given for ten minutes, irrespective of the height of the body temperature, the results were not good. In the case of some patients, even those with the highest temperature, the fall was so rapid that ten minutes was too long, while in a majority of the cases the time was not sufficient, and the temperature after the bath, instead of falling to near normal, did not fall below 106° or 104° F., and it soon rose again so that after the lapse of an hour another bath was required. The overheated body and viscera had not been brought sufficiently near the normal temperature to enable the organs to resume their functions. The opportunities for recuperation were therefore greatly diminished.

The disadvantages of the ice bath are that it requires a large staff of assistants to hold a struggling patient, and to rub him as thoroughly as the circumstances demand. It is tiresome and painful to those giving the bath. Six or eight assistants are required to each tub, and when two or three baths are being given at one time, as was the case for hours at a time at Bellevue, these disadvantages are increased. A large amount of ice is necessary, and an adequate amount may not always be at hand. For example, 20,000 pounds were used at Bellevue Hospital from August 9th to 13th for the ice-water baths alone.

The ice pack was given by placing a patient on a rubber sheet and packing large pieces of ice along and between the legs and along the sides of the body. The upper surface of the body was then rubbed with the hands and with pieces of ice. This procedure often required more than an hour to reduce the temperature. When it was employed, the temperature was allowed to fall to 101° F.; and it almost always went to 96° or 95° F. This method does not permit of the necessary amount of friction being applied over the whole body. The writer saw it used extensively when he was an interne at Bellevue Hos-

pital, and is convinced that it is not as stimulating as a cold bath, and, therefore, not as efficacious.

At the Flower Surgical Hospital, as reported in the *Hahnemannian Monthly*<sup>1</sup>, a method of procedure was followed which seemed to be excellent. The patient was stripped and put on a cot covered with a rubber sheet, an ice cap was applied to his head, and three sections of hose with nozzles giving a fine needle spray were fastened to cold-water faucets and the patient vigorously sprayed until his rectal temperature was reduced to 103° F. The patient was then wrapped in two blankets. If a secondary rise to 104° or 105° F. occurred, the spraying was repeated until the temperature fell to 101° F. There were twenty-six patients thus treated, their temperature averaging 108° F., and of these but three died, a mortality of only 11.5 per cent. The needle spray is a tremendous nervous stimulant, and with tap-water at 75° F., there is no sudden shock. This method is so excellent and is founded on such sound principles that it deserves widespread recognition.

At St. Vincent's Hospital the treatment was as follows: The patient wrapped in a cotton sheet, was placed on a stretcher, covered with a rubber sheet. Dipperfuls of cold water were forcibly dashed on him from a distance of several feet. In the very severe cases, every two or three minutes a small stream of very cold water from a pitcher was allowed to fall from a height of six or eight feet and strike the patient on the forehead between the eyes. This treatment proved to be powerfully stimulative, and was continued until the body temperature fell to 104° or 103° F. The patient was then wrapped in blankets and surrounded by hot bottles. The body temperature fell slowly to normal, and no marked reaction occurred. Often after a short interval, the warm pack brought on sweating and the patient slept. When a second rise of temperature occurred, the procedure was repeated. Cold water and whisky were given upon awakening. Digitalis and liquor ammonii acetatis were about the only stimulants used. The convulsive seizures were controlled by whiffs of chloroform. The giving of strychnin was avoided, as it was believed it increased the convulsions. Of the 197 hyperpyrexial patients thus treated, only 12 died, or 6 per cent. Eight others returned a week later and died of meningitis, etc. Including all the deaths, as has been done in the records of other hospitals, there was a mortality of but 12.15 per cent., by far the best results obtained. This plan of treatment was suggested by Dr. Joseph O'Dwyer and was carried out by his house physician, Dr. C. F. Chandler.

Drugs, when administered in their usual doses, did

<sup>1</sup> January, 1897, p. 61.

not appear to act, and it seemed to the writer that until the temperature fell below  $104^{\circ}$  or  $103^{\circ}$  F., they had very little if any effect, either in stimulating the heart or quieting the delirium. Those which seemed to stimulate the best were camphor in ether, caffeine, Hoffman's anodyne, digitalis, whisky, and strychnin. Alcohol in some form was often necessary, and was usually well borne. In the most pronounced cases of delirium and convulsions, the best sedatives were morphin and small doses of hyoscin. Trional also acted well, and even in large doses produced no ill effects, one man taking as much as 100 grains during twenty-four hours. The sequelæ (malaise, weakness, and loss of appetite) were best treated by the administration of a mixture containing from 5 to 15 minims of the tincture of nux vomica, and from 10 to 20 minims each of the compound tinctures of cinchona and gentian three times a day. In patients in whom a sudden rigid spasm of the respiratory muscles and a general muscular rigidity occurred, one or two drops of amyl nitrate dropped on the mucous membrane of the nose relaxed the spasm. One or two patients treated in this manner recovered after they were thought to be dead. This treatment was also effective in sudden collapse. Artificial respiration practised for half an hour to an hour after breathing had ceased, succeeded in some cases in causing it to be re-established, and some of the patients recovered.

The advisability of bleeding sunstroke patients has long been a mooted question. Most authors strongly condemn the practice except in a very limited class of patients, such as large, full-blooded men with a marked tension of the pulse, throbbing arteries, and wild delirium. The writer saw it tried on two such patients at Bellevue Hospital, with beneficial effects. In some other less sthenic cases it did not appear to do good, and it is a question if it did not do actual harm.

Ice-water enemata were used in many cases at Bellevue Hospital, with excellent results. This treatment was especially beneficial in the case of patients who were conscious on admission, with a temperature of  $106^{\circ}$  to  $107^{\circ}$  F. Within an hour after the enema the body temperature had fallen to  $100^{\circ}$  F., and in some cases it did not rise again. Sometimes the ice-water enema was used to control the secondary rise of temperature, but it did not prove very effective for this purpose. When the patients were unconscious the enema did not produce the same amount of stimulation as the cold bath with friction, and was therefore not as beneficial, and in fact it did not control the rising curve of the temperature, as well as the cold sponging or cold baths.

Japanese ice-bladders filled with ice and placed

in the axillæ and on the groin of patients with thermic fever, whose temperature ranged from  $103^{\circ}$  to  $105^{\circ}$  F., controlled the fever sufficiently, and if additional cold was needed, the cold coil on the abdomen was of great assistance. These means were especially effective with women. When the number of baths to be given was a serious consideration, these simple methods were of considerable help.

The best treatment, therefore, seems to be the application of a needle spray, ice bath, or cold pack until the temperature falls to  $103^{\circ}$  or  $104^{\circ}$  F., followed immediately by a hot pack with stimulants and sedatives, as one's judgment may deem necessary.

A brief summary of the pathology and causation of sunstroke is all that the limits of this paper will permit. The gross pathology has always been conflicting, and the changes found are not characteristic of any definite and uniform lesions. It seems that we must finally turn to cellular pathology in order to study the changes in the cells themselves and in order to learn, if possible, both the cause and its effect. The clinical symptoms also indicate this. The prodromal symptoms are those of acute functional disturbance, and the serious later symptoms show that there are grave changes in the blood and in all the nervous centers, especially those which rule and hold in stable equilibrium the heat-controlling mechanism of the body.

Dr. Ira Van Gieson, Director of the Pathological Institute of the New York State Hospital for Lunacy, has kindly furnished me with the following report of the changes in the nervous system in three cases of sunstroke. This is but a preliminary report on a series of fifteen cases which occurred during the summers of 1895 and 1896. He has allowed me to anticipate his more detailed notes on the pathology of sunstroke, which, with more extended clinical observations by the writer, will appear in a future issue of the *New York State Hospital Bulletin*. Sections have been examined from the spinal cord, cerebellum, and various portions of the cerebrum, such as the caudate nucleus, optic thalamus, lenticular nucleus, paracentral lobule, cornu amonis, and middle portion of the second frontal convolution. All these sections show more or less pronounced changes in the chromophilic plaques of the ganglion cells. These plaques in some cells are changed in shape and are fewer in number; in others they appear to be broken up into fine dust, and, again, in others have even entirely disappeared. The nucleus stains more deeply with methylene blue than it should normally, and within the nuclear membrane there are some minute spherical granules which are not normally present. As the chromophilic plaques show the potential energy stored in the cells, and any



changes in the nucleus may be said to be directed against the life of the cell, it will readily be appreciated how extensive are the changes which have occurred. In the drawings which Dr. Van Gieson has prepared, a comparison with the normal cells from these regions will indicate these changes better than a description does. His deductions from these changes are as follows:

"We have found in these three cases a universal exhibition of acute parenchymatous degeneration of the neurons of the whole neural axis. In the cerebral cortex and in the cerebellum the cells show the same stages of degeneration. The spinal-cord cells apparently are not as extensively involved as those in the cortex and cerebellum. There seems to be no other interpretation open as to the significance of this degeneration than the operation of a toxic substance upon the ganglion cells. There is a resolution of the elements of the ganglion cells as an exhibition of the chemic reaction between a poison on the one hand and the constituents of the cell on the other. This toxic resolution of the ganglion cells may not necessarily go on to the destruction of the cell, and is compatible with restoration and recovery of function and structure. This depends, however, upon the cessation of the poisons. In other words, in insolation there is toxic cytolysis or cell resolution of the neurons, which depends upon the condition of the body forces, the eliminative capacity of the body, and the strength and duration of the poison. Depending on these three factors, the neural parenchymatous degeneration may result in restoration or destruction of the neurons involved. I have no hesitation in accepting the toxic agency of insolation from the morphologic changes in the ganglion cells, because I find that such changes are in every way similar to those produced by the operation of a great variety of other poisons, including the extrinsic group, such as alcohol, lead, etc., and the microbial poisons and other intoxications, both in human diseases and in those produced experimentally in animals. Furthermore, by the method of elimination in excluding other groups of poisons, I feel justified in concluding that sunstroke is a species of auto-intoxication, and that the neural symptoms find a clear and definite explanation in the acute parenchymatous degeneration induced by an autogenous poison."

The nervous system of one of these three patients was from a boy in whom alcohol can be surely excluded.

While the autotoxic basis of sunstroke, with heat as a contributing cause, has previously been suggested, to Dr. Van Gieson should be given the full credit of placing this theory on a more definite, tangible basis by finding parenchymatous degenera-

tion of the nervous system similar to other toxic degenerations of this tissue, and by stimulating the chemico-physiologic experiments of Dr. Phœbus Levene, Associate in Physiologic Chemistry at the Pathological Institute, in his demonstration in animals of the toxic properties of the body fluids in insolation.

Ten years ago, Vincent, in France, as a result of experimental work, came to the conclusion that the exaggerated elevation of temperature acts principally on the central nervous system, but in an indirect manner.<sup>1</sup> In other words, it is a poisoning of the economy by the products of combustion which accumulate in the blood. The morbid trouble provoked by hyperthermia is the expression of an auto-intoxication which, after having a general excitation of the central nervous system, brings on its final destruction. On the other hand, Wood<sup>2</sup> and Laveran,<sup>3</sup> and many others, consider that all the changes and symptoms are due solely to the excessive amount of heat in the body.

Let us first consider the mechanism of sunstroke from the standpoint of its causation by heat alone. The normal body can and does resist any undue decrease or increase in its temperature as long as the equilibrium of the heat production, distribution, and loss, is maintained. This is accomplished by the contraction or dilatation of the skin capillaries, and by a decrease or increase of the perspiration, with the consequent decrease or increase of the loss of heat from the skin. It is also supposed by some authors that certain cerebral centers preside over the heat regulation by inhibiting production. Heat is produced by the chemic metabolism constantly going on in the body, and is especially generated during muscular action. Two and six-tenths per cent. of the heat is lost from the body by warming the substances taken in as food and drink, 2.6 per cent. by warming the inspired air, 14.7 per cent. by evaporation, and 80.1 per cent. by radiation and conduction from the skin. During such weather as was experienced last summer the loss of heat by cooling inspired air which was already three-fourths saturated with vapor and often hotter than the body, would practically be nothing. Radiation and conduction from the body to hotter air would also be abolished, and over eighty per cent. of the sources of heat loss would be withdrawn and the body would have to depend on evaporation for its loss of heat. If the air should be nearly saturated with vapor, and no air be stirring to renew that in contact with the body, it is readily seen that if such conditions should be long

<sup>1</sup> Vincent, quoted by Laveran, *Bull. de l'Académie de Médecine*, 3d series, Vol. 32, 1864, p. 501.

<sup>2</sup> Wood, "Sunstroke," 1872; also, Pepper's "System of Medicine."

<sup>3</sup> Laveran, *loc. cit.*

continued, and if large amounts of heat were produced by muscular action, the strain on the regulating centers would be severe. Should these centers be weakened in any way by previous illness or dissipation, they would soon succumb, and heat accumulating quickly, some form of sunstroke would supervene. If sweating ceased, as it usually does in sunstroke patients, just so much quicker will all heat loss be in abeyance, and all the heat produced be stored up and the danger to life be imminent.

Increased heat causes increased oxidation and more heat; an increase of oxygen being demanded, the respirations would increase and the pulse-rate quicken under the stimulation of the heart by the heat. If the resistance of the patient should be great, or the exposure to heat not excessive, the patient would suffer from heat prostration, which is but the prodromal period of the asphyxial or hyperpyrexial forms, if the resistance should be less, or the exposure more severe, unconsciousness might come on and the asphyxial form develop, with a paralysis of the vasomotors which would prevent a great rise of temperature, for, as is well-known, vasomotor paralysis causes a dilatation of the skin capillaries and a consequent fall of temperature, due to the sudden increase in the loss of heat. If, however, exhaustion occurs, with an accumulation of heat so excessive that the heat loss would not counteract it, the great production and accumulation of heat would give rise to the hyperpyrexial form. The blood changes and all the changes in the body will be caused by the excessive heat, and death will ensue when these changes are such that the nerve-centers can no longer functionate.

But does heat cause a cessation of sweating, and how? Is it a parenchymatous change in the sweat glands, due to exhaustion from excessive action and consequent cessation of function, or is it a cessation of action caused by the effect of heat on the nerve-centers governing the secretion? It is not due to changes causing non-conduction in the nerve-fibers, for these will conduct perfectly at a temperature of 125° F.<sup>1</sup> As yet no experiments have been successful in solving this question. The cessation of sweating in other fevers we believe to be brought about by the cause of the fever, not by the fever itself, *i.e.*, by the temperature *per se*. In the severe cases of sunstroke there is a vasomotor constriction, not a dilatation as most authors claim. This is proved by the cold, pale skin when the rectal temperature is 109° F., or more, and this constriction of the skin vessels in other fevers is also produced by the causal agent, not by the temperature. Will the theory, therefore, of some poison or poisons circulating in

the blood, *i.e.*, the auto-intoxication theory, better explain the clinical symptoms? The heat and concomitant factors of the weather are undoubtedly contributing causes, just as exposure to cold is the contributing cause to ordinary lobar pneumonia. The effects of heat on the body, as shown by the prodromal symptoms, are shown in disturbances in the glandular and digestive functions of the body. The chemic metabolism of digestion is not normal, and substances may be produced which, in the disturbed functional activity of the liver and other glands, are not properly and normally broken up, or there may be abnormal substances produced by the disturbed condition of the digestive apparatus, which are absorbed. These different substances carried over the body are not excreted because of the functional disturbances of the emunctories, and, by the intense and rapid action of these substances or by their slower and more prolonged action on the ganglion cells of the central nervous system, produce the changes described above. There will, therefore, first be symptoms of functional disturbances, followed by those of destructive action. The equilibrium of the heat-regulating centers will be disturbed because these centers will themselves be affected. The same external causes affecting heat loss will be present, and the same train of events will occur as though heat alone were the sole cause.

Many patients die of sunstroke with a temperature which, in other fevers, would not be unusual and do not cause death. For example, one patient came into Bellevue Hospital with a temperature of 102.8° F., a pulse of 116, and respirations 22, perfectly conscious and rational. Four hours later he had become delirious and unconscious, his temperature being 103° F., pulse 132, and respiration 32. A bath brought the temperature down to 100° F., the pulse to 100, and the respiration to 22. Three hours after the bath his temperature was 100.8° F., pulse 90, and respiration to 20; and four hours later he was wildly delirious, his temperature having risen to 105.4° F., his pulse to 120, and his respirations to 30. After another bath his temperature fell to 96.4° F., and in spite of stimulation he died. The subnormal temperature does not seem sufficient to have caused death. It would seem that the cause which produced the wild delirium and unconsciousness, with the rapid heart action, caused his death, as a temperature of 103° or 105.4° F. would not be fatal. Moreover, the idea so often expressed that a temperature of 113° F. is necessarily and surely fatal is disproved by a patient in the Presbyterian Hospital, whose temperature rose to 115° F., and yet he recovered. That disease is produced when the normal glandular functions cease, or when abnormal

<sup>1</sup> Wood, *loc. cit.*

substances are produced, is self-evident, as is seen in myxedema, exophthalmic goiter, and tetany. If the excretory functions are also disturbed, as in nephritis, uremia, with its convulsions, is an everyday occurrence. Liebermeister's theory that the degenerations seen in fevers with high temperatures are caused by the temperature has long been given up, and it is now believed that the degenerations and temperatures are concomitant effects of the same cause.

Blood changes and petechial rashes, spoken of in the earlier part of this paper, as observed in the hyperpyrexial cases, were also present in the asphyxial form; that is, in patients whose temperature would not account for such changes. The blood-serum from the blood of some patients, when injected in only nine cubic centimeter doses, caused death in rabbits within an hour. I am convinced from my own experiments that normal human serum in such doses will not produce such effects. The urine of patients on admission was found to be markedly less toxic to animals than the urine of the same patients twenty-four to forty hours later, seeming to show a retention of toxic substances in the body at the time of the sunstroke. These experiments, however, are few in number and as yet not sufficiently controlled, but they are very striking.

The theory of auto-intoxication, with heat as a contributing cause, seems, therefore, to be as capable of explaining the symptoms of sunstroke and its sequelæ as the theory that heat alone is the cause. While my own experience last summer inclined me to think that there was something besides the effects of heat which was causing such terrible effects, there is still so much work to be done in the cellular pathology of all the viscera, and so many experiments to be made as to the effects of heat on the animal organism, and these effects studied by the new staining methods in vogue in cellular pathology, that it cannot be claimed that the auto-intoxication theory is as yet conclusively proved. Heat alone, however, does not seem sufficient to explain all the clinical and pathologic observations, while heat with the auto-intoxication of the body better explains the cause and effects of sunstroke.

*Koch's New Tuberculin.*—In M. Nocard's report on Koch's new tuberculin to the Paris Medical Academy, the Commission of Serums makes an exception in favor of the tuberculin on account of the scientific reputation of M. Koch and the impatience of sufferers to benefit by the proposed cure, and advises the Academy to permit its temporary use. If the usual custom of the Academy were followed the new tuberculin would not be accepted until clinical proof, or at least experiments, proved the assertions made in its behalf.

### THE SURGICAL TREATMENT OF GRANULAR CONJUNCTIVITIS.

By J. A. BACH, M.D.,

OF MILWAUKEE, WIS.;

PROFESSOR OF DISEASES OF THE EYE AND EAR, WISCONSIN COLLEGE OF PHYSICIANS AND SURGEONS.

THE important feature in all forms of treatment of granulations of the eyelids, whether surgical or otherwise, is to remove pathologic elements and to prevent further invasion of the same with their destructive consequences, with the least possible harm to the conjunctiva and lids. Without proper treatment we know that granulations will in many cases ruin eyes, and in others cause serious lesions, either by inducing ulcerative processes or, in the more favorable cases, by producing cicatricial contractions and deformities of the lids. In fact, a large percentage of these patients when they come for treatment have already suffered in same way or other from changes in the mobility or form of the eyelids. These complications, by the additional irritation they induce, further aggravate the unpleasant symptoms and not infrequently produce spasmodic contractions of the muscles of the lids, forming a serious obstacle to the successful treatment of the case. Therefore, often one of the first considerations in the surgical treatment is to remove such complications by proper operative measures. A canthotomy, in cases where this is indicated, on account of the powerful contractions of the orbicularis muscles, will give us the most valuable aid as a preliminary step to further treatment. Other abnormal conditions of mobility or shape of the lids can frequently be corrected with great advantage before proceeding far with the treatment proper.

The surgical treatment, to be of any advantage in the cure of granulated eyelids, must be of a conservative nature and must seek, as far as possible, to *protect* rather than *destroy* invaded portions of the conjunctiva and deeper tissues. We must, therefore, place as foremost of all surgical measures, the expression rather than excision of the pathologic elements in all cases where this can be done. By this means we may not completely succeed in removing all the granulations, but we will succeed in suitable cases if the operation is thoroughly done, as it ought to be, in removing most of them and at the same time in so stimulating absorption and physiologic tissue changes as to lead to a rapid cure of the condition, whether supplemented by further local applications or not. It is not to be forgotten that the ordinary remedies are applied, not with the idea of directly destroying the granulations but for the purpose of inducing that state of local hyperemia which most favors absorption, so that if we can by expression directly remove these deposits we gain valuable



time besides producing the same results physiologically that topical applications produce. Expression of granulations can be employed in all cases but is more especially adapted to the first stages of the disease before the deeper tissues are much involved. When severe inflammatory symptoms usher in the disease it is well to allay such inflammations before applying surgical measures of any kind.

A number of instruments have been devised for the purpose of expression, the most suitable of which are Knapp's roller forceps and Noyes' forceps. Another instrument which may be used with great advantage is the ordinary Desmearre's entropion lid forceps, which in many cases I prefer to other means. However, it is not the particular instrument which one may use in this operation, but it is the completeness with which the operation is done that cures the patient. Frequently expression can be successfully carried out by the use of the finger-nails. Friction, as applied by means of a brush or similar means sufficiently strong to tear the superficial capillaries and soft friable granular masses, without destroying the normal tissue fibers, has been extensively used in some quarters with great satisfaction. Grattage, or scratching by means of a stiff brush or a small metal rake, is a similar means but rather more severe, and ought to be used with care and discrimination. In the first stages of the disease it might do considerable harm by tearing and lacerating the conjunctiva, and, therefore, it is applicable only where there are exuberant and fleshy granulations covering the whole lids, rendering the conjunctiva so completely infiltrated and covered as not to be recognizable. Expression in such cases is frequently not sufficient, as we have here to deal largely with hyperplasia of tissue elements. The results obtained by friction or grattage, by tearing the superficial capillaries, as well as the softer pathologic elements, will cause local depletion and will greatly improve circulation and absorption. It is surprising how quickly thick, fleshy lids can be reduced in a few days by this means where it would take months by means of the ordinary topical stimulation. The good results of this procedure can be augmented by the additional use of antiseptics and astringents. In the more advanced stages of the disease, when deep deposits have taken place, especially at and in the fold of transmission, the venous circulation often becomes very sluggish owing to mechanic obstruction. Absorption under such circumstances is deficient and practically at a standstill. Neither expression nor grattage is fully capable of removing this condition of affairs. Thorough massage has produced good results, although this is not always sufficient. Through the thickening and stretching produced the conjunctiva be-

comes redundant, and the careful excision of the fold of transmission has been practised in such cases with decidedly satisfactory results.

A twofold indication is met in this way: In the first place we remove a large amount of infiltrated and objectionable tissue, and in the second, we destroy the overdilated and inactive blood-vessels and improve the local circulation and nutrition. It has been held that by means of excision of the fold, disagreeable contractions are liable to occur. This, however, is not the case if the excision is done in proper cases and correctly executed. It is desirable to excise as little as possible of the conjunctiva, and as this membrane is quite redundant in these cases no harm can come from this. The main object is to excise the subconjunctival tissue deep in the fold.

Galezowski is an ardent advocate of excision of the fold of transmission and does this as a routine practice in all advanced cases. In his experience he has had no unpleasant results following the operation. Special instruments have been devised for the purpose of excision, among which may be mentioned Galezowski's forceps.

Cauterization by the actual cautery has been practised to a limited extent and, in my opinion, cannot be considered a rational measure. It certainly offers no advantages over excision or grattage, besides being much more liable to leave hard and irregular cicatrices. The principle of electrolysis, which has been practised by different men with good results, would seem more conservative and therefore more applicable. I have had no experience with this method, nor do I believe that it can be made to answer the purpose as well as other means at our command. The operation of scarification of flabby granulations is, in my opinion, objectionable, as by its use we will necessarily sever and greatly injure the conjunctival covering without offering any advantage which cannot better be achieved by grattage. The use of massage, although not strictly a surgical measure, is one of great advantage in conjunction with the various other procedures. In cases in which the disease has run its course and has left behind large atrophic areas of the conjunctiva, or in which this has occurred through severe caustic or surgical treatment, transplantation of the conjunctiva of a rabbit to cover these defects might suggest itself. By thoroughly removing the overlying tissues it would appear simple enough to transplant healthy conjunctiva and give the globe a more acceptable protection.

---

*Legacy for the Academy of Medicine of Paris.*—The Academy of Medicine of Paris has received a legacy of 15,000 francs from Mme. Clarens for the foundation of an annual prize.

## SKIAGRAPHIC DERMATITIS.

By J. Y. DALE, M.D.,  
OF LEMONT, PA.

A CASE of dermatitis presenting unusual features, which occurred subsequent to and was apparently caused by the use of an apparatus employed in taking skiagraphs, recently came under my observation.

On the 12th of last May Mr. T. was subjected, for experimental purposes, to the action of an X-ray tube working at a moderately high power. The tube was applied over the right portion of the umbilical region, unusually close to the body, being not more than two or three inches distant, and the exposure lasted about thirty minutes. No sensation whatever was experienced at the time, nor were there any unpleasant or unusual effects noticed for a period of twenty-eight days, when a scattered eruption of small, round, inflamed and slightly elevated papules made its appearance, and during two or three days these papules increased in number until the redness surrounding them coalesced into a continuous area of inflammation.

When the patient was first seen by me, June 17, 1897, there was an area of inflamed skin of an irregular oval shape about six inches long by four inches wide to the right of and including the umbilicus. It was swollen, purple in color, unhealthy in appearance, and the central portion, which was denuded of epidermis, discharged a creamy pus and contained several spots about an eighth of an inch in diameter where the true skin was eroded to perhaps half of its depth. The inflamed skin was entirely free from pain, and remained so throughout the whole course of the trouble, and there was only a slight tenderness on deep pressure. For three days, during the height of the inflammation, the central portion of the surface involved, which included the ulcerations, was thickened and noticeably elevated, and at that time there was a tendency to coldness of the extremities and general chilliness. These were the only constitutional symptoms which developed at any time. Under the use of mild antiseptic dressings the discharge ceased and the inflammation gradually subsided.

The points of especial interest in this case were the anesthesia of the affected skin, and the length of time that elapsed before the inflammatory process was apparent on the external surface. As there is no other way to account for this attack of dermatitis it is reasonable to believe that it resulted from exposure to the influence of the X-ray tube. This must have injured the sensory-nerve terminals, producing a localized anesthesia, so that the electrolysis of the deeper portion of the skin was followed by a

slow inflammatory process which escaped observation until the papular eruption showed itself.

It seems to be a common opinion among medical men that the dermatitis occasionally following the application of the X-rays is due to some irritating or poisonous property of the rays themselves, but this view is not generally held by electricians and physicists. In an article on the subject by Tesla in the *Electrical Review* of May 5, 1897, he suggests four possible causes of injury during exposure to an X-ray apparatus in action: (1) Ozone, which is produced in more or less abundance, and which has considerable power of destroying organic tissues. (2) Some kind of electric action resulting from rapid and innumerable changes in the electrostatic condition of the tube. (3) Heat (?). (4) The bombardment by innumerable infinitesimal particles hurled against the surface with almost infinite velocity. He is inclined to think that the lesion is the result of either the first or of the second of the above causes. He expressly states his belief that the last is the most satisfactory theory of the physics of the X-ray.

An evidence that the dermatitis in the case reported was not directly due to the X-rays is that the portion of skin which was injured most deeply was directly beneath a broad metallic fastener in the waistband of this gentleman's trousers, which would have arrested the X-rays, but which made a good conductor for electricity.

Mr. I. T. Osmond, Professor of Physics at the State College of Pennsylvania, has explained to me the harmful action of the X-ray tubes in this way: In considering what is the actual agent of injury it is necessary to remember that an X-ray tube in operation is a source of *several different forms of energy*. (a) There is an electrostatic field of rapidly alternating high potential currents emanating from or maintained by it. (b) There is the form of energy known as the cathode rays. (c) There is the form known as X-ray, so called because its real nature is not yet understood, and which may be electromagnetic. (d) There may be the energy of minute particles moving with incalculable speed. Tesla is of the opinion that under the action of the cathode rays there is a disintegration of the reflector plate, which hurls infinitesimal particles off in direct lines with inconceivable velocity. J. J. Thomson, an eminent English physicist, believes that the atoms of the so-called elements are broken up into the really elementary matter, while the studies of Elihu Thomson, a noted electrician of our own country, have led him independently to a similar view.

The following reasons may be given for believing that the X-ray energy is not the agent of injury: (1)

A rapidly alternating high potential electrostatic action will cause similar, if not identical, injuries, under conditions not productive of the X-ray form of energy. (Tesla.) (2) It is pretty well established that the intensity of X-ray energy is inversely as the square of distance from the source, while the power of the injurious agent does not appear to act according to such a law. For a given tube, excited to a given power, the region within which injury may occur seems to have a quite well-defined boundary, ceasing abruptly very much within the extent of strong X-ray energy. (Tesla.) (3) Tesla finds the liability to injury nearly or quite excluded by covering the exposed skin with a fluid (oil or vaselin) which will exclude the contact of air, while at the same time it is very transparent to the X-rays. (4) Again, Tesla finds that all danger of injury, even within sixteen inches of the extraordinarily highly excited tubes which he uses, is removed by placing a thin screen of sheet or gauze aluminum between the tube and person, the screen being well earthed. This screen does not offer very great obstruction to the X-ray energy, as is shown by the strong fluoroscopic or skiagraphic action beyond the screen. (5) The worst spots in these injuries sometimes are in places which the X-rays could not have reached; as before mentioned, the ulcers in the case reported were on a portion of the skin which, during the exposure, was covered by a metal clasp thick enough to prevent the passage of any X-rays.

So far as a conclusion may be drawn from studies and observations yet reported, it seems probable that the injury is due in some way to the rapidly alternating high potential electrostatic action. The electric discharge from the secondary terminals of an induction coil may be alternating, *i. e.*, in different directions successively, and either may be of equal energy in both directions, or of greater energy in one than in the other; oscillatory, as a special kind of alternating; or all in one direction. Even if this action is strictly alternating (as distinguished from fluctuations of intensity of one character), either the intensities of opposite character, positive and negative, may not be equal, leaving a resultant electrolysis from the currents during the changes of states, or if the intensities are equal, and consequently the currents during opposite changes equal, so that the resultant electrolysis is chemically zero, the physiologic functions of the tissues may be destroyed. On the other hand this rapid and great change of electrical state may kill tissues by some other than electrolytic action.

In regard to the method to be pursued in preventing damage to the skin in using X-rays, it may be stated that tubes worked at low power (small coils

and little voltage on the primary) can only produce injury, if at all, by close and very protracted exposures. Very few persons possess the necessary conditions for using the tubes at the extraordinarily high power employed by Tesla.

For tubes used at what may be called ordinary high power, which are actuated by the larger coils coming into more general use, the following rule should be observed: (1) The tube must never be nearer to the body than twelve inches for an exposure of 10 or 15 minutes; and if the tube is highly excited, it is better to increase the distance even if a longer exposure should be required. (2) Tesla's suggestion of covering the skin with some fluid to exclude the contact of air or ozone, may be found valuable. (3) If the tube is sufficiently excited to work at a distance of 15 or 16 inches from the person, with a well-earthed screen of aluminum gauze intervening, absolute security from injury is obtained.

## CLINICAL MEMORANDUM.

### A CASE OF RENAL HEMOPHILIA.

By WILLIAM J. ROBINSON, M.D.,  
OF NEW YORK.

ALTHOUGH hemophilia was known as a distinct disease as early as the twelfth century, and in spite of the fact that during the last fifty years much has been written about it, notably by Virchow, Nasse, Legg, Grandidier, and Simon, we are still in complete darkness as to its pathology and morbid anatomy. Of the numerous theories which from time to time have been offered in explanation of its cause, the following three have met with the widest acceptance: (1) That it is due to an abnormal fragility of the blood-vessels; (2) to an absence of one of the ferments, which effects the coagulation of the blood; (3) to deficient innervation of the capillaries, with consequent abnormal dilatation. But these theories still are mere hypotheses unsupported by facts. As Grandidier puts it, "hemophilia is the most hereditary of all diseases," and, unfortunately, we know as little regarding its treatment as its etiology. Taking into consideration the rarity of the disease, especially of the renal variety, no apology is needed for reporting the following unique case:

Arthur B., four years old, born in this country of Finnish parents, had been passing blood in his urine for about ten days. The mother had consulted her family physician, and had visited two or three dispensaries, but with no relief, the blood becoming more profuse with each urination. At one dispensary she was advised to have the boy circumcised, he having a long and tight prepuce, but this she did not consent to, thus probably saving the child from what might have proved in his case a fatal operation. When I was called in I found the boy playing on the floor with his little brother. He seemed to be completely exsanguinated; his general appearance was as if he were made out of spermaceti, the skin being smooth and glossy



white. His hair, eyebrows, and eyelashes, resembled those of an albino (his two brothers present the same appearance in every particular). His pulse was thready and 140 per minute, and his temperature was 97.9° F. The boy felt quite well and was not complaining. Only occasionally, on passing a blood-clot, he would cry out with pain. There was no history of traumatism.

A thorough examination failed to reveal anything beyond a tenderness over the region of the left kidney. He passed in my presence a pint and two ounces of dark, bloody urine, and floating in it were two long, thin blood-clots. Upon standing the blood all collected at the bottom of the jar, leaving the supernatant urine quite clear. I injected a pint of hot boric-acid solution into his bladder and the liquid came away perfectly colorless. I gave strict orders not to allow the boy to move from his bed, and prescribed powders of one-tenth of a grain of opium and three grains of gallic-acid, one powder to be taken every three hours. I was positive that the hemorrhage was of renal origin, but was completely in the dark as to its cause. This uncertainty cleared away sooner than I expected. About four hours after I left him he was taken with a severe hemorrhage, and became faint. I was sent for in a hurry, and found him in collapse. I administered, hypodermically, my favorite stimulant combination—digitalis, camphor, and ether—to which he responded nicely, but my surprise was very great to find at the point of the insertion of the needle an obstinate, uncontrollable oozing of blood. Compression with the fingers for about five minutes, as well as the application of tannin, cocain, and Monsel's solution was ineffective in checking the hemorrhage. A pledget of cotton, saturated in a solution of equal parts of antipyrin and tincture of ferric chlorid, secured by a tight bandage, after about forty-five minutes of effort, finally stopped it. I knew then that I had to deal with a case of hemophilia.

I began to make inquiries, and the information obtained corroborated my diagnosis. The mother presented nothing abnormal, except rather profuse menstruation, which always lasted from seven to nine days. Her father had died at the age of thirty-five from pulmonary hemorrhages and epistaxis—from consumption, she said, but the description pointed unmistakably to hemophilia. Her first child was born at the end of the seventh month and died when a few days old from exhaustion, due to a severe hemorrhage from the umbilicus. The mother did not know that she belonged to a bleeder family. I instituted the following treatment: A large ice-bag was kept continuously over the region of the left kidney, one grain of sodium sulphate was given every hour, and a dram of the following mixture every four hours:

R Hydrastin hydrochlor.	gr. iv
Ergotole . . . . .	3 ss
Tr. opi deodor. . . . .	3 ss
Glycerin . . . . .	3 i
Aq. menth. pip. . . . .	q.s. ad 3 iii.

The diet was confined to milk and vichy and soft boiled eggs. The next day the boy had another slight hemorrhage—and that was the last one. For two or three days afterward the urine was very slightly tinged with

blood. After a few days had passed without a trace of blood appearing in the urine, I began to administer iron (liq. ferri mangan. pepton., a teaspoonful in milk twice daily) and tonics, and the boy made a surprisingly rapid recovery. He is now quite well and has had no recurrence (a year has elapsed since his first attack). He is still taking (interruptedly) sodium sulphate, hydrastis, and ergot, and also a preparation of iron. He now has considerable color in his cheeks.

The only other case of renal hemophilia which has ever come under my notice was in Professor Leyden's clinic, at the Charité, Berlin. A man was brought into the hospital in a condition of shock. After regaining consciousness, he said that he was taken with a sudden pain in the side, and on going into a public toilet room, he passed what he thought must have been two liters of blood from the bladder. In the hospital he passed that same day about 1 1/4 liters (three pints) of dark, bloody urine. He was twenty-six years old, and said that he had such attacks every two or three years. He once had pricked his ear with a needle, and it took two physicians several hours to control the bleeding. A brother of his was taken with a frightful hemorrhage from the rectum during defecation and expired before medical aid could be summoned.

## MEDICAL PROGRESS.

**Anesthetization of Children.**—ROWELL (*Lancet*, May 15, 1897) who has had an extensive experience in administering anesthetics, has found that with children he obtains the best results from the use of the A. C. E. mixture, followed by ether, given by the open method throughout. He begins with a small mask, and with the patient lying on the side. The A. C. E. mixture is dropped slowly upon the mask so that it takes one minute for the whole surface to become wet. When respiration has become fairly free, Rendle's mask, containing a sponge, upon which one-half to two drams of the A. C. E. mixture has just been poured, is quickly substituted for the open mask. As the vapor from this mask is stronger than that which the child obtained before, there may be a little straining or coughing. This is relieved by lifting the mask slightly from the face. When the breathing is again free, from one to three drams of ether is poured upon the sponge, and when the child has become accustomed to this, a fresh, dry sponge, upon which from two to four drams of pure ether has been poured, is substituted for the mask. As soon as the child breathes this freely he is ready for operation. The time required altogether is only three or four minutes, and throughout the process the respirations are an accurate guide to the child's condition.

In the case of children who scream and fight, Rowell uses the Rendle mask from the start, holding it close to the face. As soon as the child has ceased crying, the mask must be removed and two or three breaths of pure air allowed. The occurrence of lung trouble, after the administration of ether in children, is almost absolutely preventable by keeping the child in a thoroughly warm room for some hours after the operation. In an experience with nearly 800 cases, in which the anesthetic was

administered by the method above described, no dangerous symptom was observed. Occasionally the symptoms of an over-dose were present, but with proper attention to the patient, even these should never occur.

**To Determine the Death of the Fetus.**—KNAPP has shown that the death of the fetus, is accompanied by the appearance of acetone in the urine of the mother. This may easily be demonstrated according to *La Presse Med.*, May 22, 1897, by the fuchsin test of Chautard. A solution of fuchsin, 1 to 2000, is decolorized by sulphuric acid. To make the test, half an ounce of urine is poured into a test tube, and a few drops of the fuchsin solution added. If acetone is present, the color of the urine becomes violet, the depth of color depending on the amount of acetone. This simple test is within the reach of every practitioner.

**The Hand as a Tampon and Dilator in Placenta Previa.**—MYERS, in the *Medical and Surgical Reporter* of May 15, 1897, has found the hand a most successful tampon in cases of placenta previa. If well oiled, it can be introduced without an anesthetic into the vagina, and one finger after another can be passed into the cervix until its dilation is complete, but once in position, the hand must be kept there until labor is terminated, even though some hours intervene.

## THERAPEUTIC NOTES.

**Erysipelas Treated by Guaiacol.**—WAGON (*Gazette Heb. de Med. et de Chir.*, May 23, 1897) has had excellent results from the use of guaiacol in erysipelas. From fifteen to thirty minims of the drug are painted on the affected surface once or twice a day. The temperature falls sometimes as much as four degrees in two hours, the remissions being more striking toward the end of the malady. The fever curve ascends two to four hours later, but there is evidently a permanent as well as temporary effect of the guaiacol.

Aside from its action on the temperature, guaiacol improves the general condition of the patient. The delirium disappears, and the headache, anorexia, and coated tongue, all show changes for the better. Pain is lessened, and restlessness improves with the improvement in the patient's other symptoms. If the drop in the temperature is too great, there is a sensation of great cold accompanied by pallor, profuse sweating, and weak pulse. In the fever which follows this too great depression of the temperature, the patient may expire; but if the dose does not exceed that indicated, the danger of such an unfortunate result is a slight one. Nevertheless, it is beyond dispute that guaiacol is a most powerful remedy, and one which demands on the part of the physician employing it a corresponding degree of watchfulness and caution.

**The Therapeutic Value of Ozone.**—GESSLER (*Weiner. Med. Blät.*, May 20, 1897) has found the inhalation of ozonized air to have a powerful therapeutic influence. He used an apparatus made by Labbé and Oudin, which was arranged so that each liter (quart) of air contained about

0.10 mg. of ozone. The patients took these inhalations in daily doses, increasing from five minutes to half an hour.

The cases in which this treatment has been used are: (1) In primary and secondary anemia of the severe type; (2) in diabetes mellitus; (3) in tuberculosis of the lungs in different stages; (4) in old cases of pleuritis with adhesions. The best results were obtained in the cases of anemia and phthisis. Of the latter, eight cases, in which the lesion was not pronounced, were much improved by the inhalation. Of twenty-two patients in moderate and advanced stages of the disease, nine died; three were improved so that they might be pronounced cured. Of the remaining thirteen, two were well after 1½ years, and the rest experienced a certain amount of improvement. Examinations for bacilli were regularly made, and it was found that the ozone has an antibacterial action as well as a favorable one upon blood formation. As the effect of the ozone, however, is only temporary, patients ought to receive this treatment continuously. Naturally, dietetic and hygienic measures are also to be instituted.

**Tincture of Benzoin for the Itch.**—DE HOLSTEIN recommends in cases of itch, friction of the affected parts with tincture of benzoin. In two cases in which it was used the eruption began to subside after the first application, and two days later the patients took baths and were cured. It is possible that the alcohol contained in the tincture deserves a part of the credit for the result, for it could act not only directly but also by opening the crevices in the skin, thus facilitating the entrance of the benzoin into the burrows of the itch insects.

**Aseptic Treatment of Burns.**—LUTAUD (*Jour. de Med. de Paris*, May 23, 1897) rejects most of the old remedies for burns, on the ground that they are not aseptic. He retains the following:

R Sweet almond oil	. . . . .	12 parts
Lime water	. . . . .	2 parts
Salol	. . . . .	1 part.

This mixture, however, is not thick enough to allow of its being applied at the end of the treatment when one wishes to produce a drying up of the burned surface, and, besides, the salol is not dissolved. For these reasons he prefers the following:

R Carbolyzed glycerin	} aa . . . . .	3 i
Sweet almond oil		
The yolks of fresh eggs	. . . . .	No. 2.

When this mixture is beaten up it makes a sort of mayonnaise of the proper consistency, and is rendered antiseptic by the carbolic acid. Its application does not cause any pain, even upon the most sensitive surfaces; on the contrary it is itself analgesic. With a forceps this salve is applied to the parts where the epithelium has been lost, and upon the burns of the third degree, and then over the whole bismuth powder is scattered. This dressing is left in place for two or three days, and is then renewed. The results have been most satisfactory. In extensive burns of the third degree, Lutaud has been able to obtain in two or three weeks a complete healing, and that without any cicatricial contraction.

# THE MEDICAL NEWS.

A WEEKLY JOURNAL  
OF MEDICAL SCIENCE.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed *exclusively* to THE MEDICAL NEWS will after publication be liberally paid for (accounts being rendered quarterly), or 250 reprints will be furnished in place of other remuneration. When necessary to elucidate the text, illustrations will be engraved from drawings or photographs furnished by the author. Manuscripts should be typewritten.

Address the Editor: J. RIDDLE GOFFE, M.D.,  
No. 111 FIFTH AVENUE (corner of 18th St.), NEW YORK.

Subscription Price, including postage in U. S. and Canada.

PER ANNUM IN ADVANCE . . . . .	\$4.00
SINGLE COPIES . . . . .	.10
WITH THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, PER ANNUM . . . . .	7.50

Subscriptions may begin at any date. The safest mode of remittance is by bank check or postal money order, drawn to the order of the undersigned. When neither is accessible, remittances may be made, at the risk of the publishers, by forwarding in *registered* letters.

LEA BROTHERS & CO.,  
No. 111 FIFTH AVENUE (corner of 18th St.), NEW YORK,  
AND NOS. 706, 708 & 710 SANSON ST., PHILADELPHIA.

SATURDAY, JULY 24, 1897.

## CHRISTIAN SCIENCE.

OUR attention has lately been attracted to the practical bearing of this cult upon the welfare of the community by several sad occurrences. Some of these incidents are known through personal professional attendance, others through an equally personal and intimate non-professional acquaintance. The first case to be observed was that of a middle-aged woman who had led a life of much hardship, who had been an ardent disciple of Christian Science, and who had spent much of her earnings in the support of "the cause." For a year she had shown some mental alienation; had spent hours writing incoherent messages from spirits or equally incoherent letters to relatives in which the dead and the living were referred to without discrimination; had delusions of grandeur, in that she believed herself to be the medium of communication of a spiritual edict of supreme importance; and she finally developed acute mania, a few days before the time when a settlement of business matters would have left her in a position to enjoy life after her protracted struggle, and to be of comfort and assistance to other members of her family.

The second case was that of a woman of culture who, with her husband and sister, became converts to Christian Science. Shortly after visiting a friend who was dying of gastric cancer, and whom she had tried to persuade to discharge her physician and declare herself well, she was herself seized with symptoms of the same malady. After an ineffectual attempt to "throw off the thought of sickness," a healer was summoned. During the first visit of the latter, she had a sharp hematemesis which he declared to be the visible sign of the dismissal of the disease. Finally, after weeks of suffering, friends interfered and secured the attendance of a physician, who did the only thing possible—relieved her of pain.

The third case was that of a middle-aged man whose wife was a prominent "Scientist," and who, on that account, failed to receive prompt medical treatment for a complication of liver and kidney degeneration. It certainly would be unfair to say that his life was sacrificed to Christian Science, but it is an open question whether it might not have been prolonged for several useful years.

The fourth case was that of a woman, herself a Christian Scientist, and under the influence of the wife of the man referred to above, who kept up her household duties until actually overcome by physical weakness. Relatives insisted on calling a physician, who found the patient pulseless, with advanced double pneumonia, and already in *articulo mortis*. The "Scientist," of course, ascribed death to the neighborly interference.

The fifth case was that of a young man who made a gallant and prolonged fight against multiple tuberculosis, under the auspices, in turn, of homeopathy, Christian Science, and a patent medicine said to contain sulphuric acid, and advertised as the insuperable foe of all bacteria. Death finally occurred during the reign of homeopathy, but when the vital powers were so reduced that no means of treatment would have been of avail. Judging from the resistance made to the disease, it seems that proper and continued treatment might have saved his life if he had not been under the control of "Scientists."

These are not as incisive arguments against the cult of Christian Science as the accounts frequently appearing in the daily press of deaths due to acute causes occurring under the responsibility of healers, when the opportunity of medical aid has been refused either



by the patient or his immediate relatives, but they indicate the same tendencies in a stratum of society in which the demands of custom for the pretense at least of medical attendance, can scarcely be resisted to the last. Indeed, the concession of Christian Science to regular professional practice in these cases has only been to avoid the odium of a coroner's investigation and divide the responsibility of death.

Christian Science is one of the most insidious enemies with which legal medicine has to contend. Ordinary laws regulating the practice of medicine can scarcely be construed to apply to those who declare publicly that they are most distinctly not giving medicinal or even medical treatment. With specious claims to literal truthfulness, the Christian Scientists can claim that they are carrying into practice what every member of any Christian sect and of many other religious bodies, accepts as dogmatically correct. It is impossible to require by law the attendance of a regularly qualified medical man on any particular case. In a general way, necessary medical care is required of those responsible for the welfare of the patient, but it is impossible to lay down practicable rules regarding the degree of physical or mental disability which shall make the calling of a physician imperative. Neither is it within the power of the law to prescribe the qualification of any particular physician or of his school of practice. It is manifestly impossible to discriminate against a school of medicine in good legal and ethical standing, or to go within the limits of any school of practice and endorse certain ideas and condemn others.

Christian Science has its roots in that element of society from which all similar fads derive support. Its advocates are persons of considerable social influence, of good moral character—too good to appear compatible with deeds of inhumanity and tendencies toward murder—of leisure for proselyting. Such persons can not be alluded to as ignorant and uneducated, yet we usually find them superficial in knowledge and comparatively untrained in intellect. They are just the ones who can be convinced by sophistry, and who cannot follow a truly logical mind in the exposure of fallacy. In the event of insanity, or of moral obliquity or foolish conduct, such as hardly warrants the thought of restraint, the question naturally occurs to every fair-minded person, how much is Christian Science the cause and

how much the result of mental unbalancing? We believe that no general answer can be given to this question; that each case must be judged by its particular features. We would, however, assert that in the majority of such instances, Christian Science has acted as an exciting cause and has determined the development of actual insanity, or of serious loss of the reasoning power, in persons who would otherwise be merely incapable of the highest logic, or who would appear slightly below par intellectually.

#### **A NEW RESPONSIBILITY FOR THE MEDICAL PROFESSION.**

It is now a generally accepted fact that the bicycle as a means of securing necessary exercise has received the endorsement of the medical profession. Not only do the members of the profession recommend it to their patients as a remedial agent, but they have themselves adopted it as a means of recreation and exercise. This fact seems to have appealed powerfully to the laity, and all remonstrances against riding the wheel in cases in which it is contraindicated are met with the all-satisfying argument that the doctors all recommend it, and the insinuation is that he who does not is behind the times.

In creating and sustaining this universal opinion of approval, the medical profession has assumed to a certain degree the moral responsibility of keeping bicycling within healthful limits. The use of the wheel instead of affording a pleasurable, beneficial exercise, is rapidly degenerating into what gives promises of becoming, if not promptly checked, a great physical abuse.

Every new time-saving invention adds additional strain to the nervous system. The motorman on the trolley line, or the gripman on the cable-car, does not require the same amount of muscular power as the driver of a horse-car, but the increased speed and the constant alertness in avoiding accidents engendered thereby require a higher order of talent and a more sensitive nervous system. The bicycle is no exception to this rule. While in cases of neurasthenia it acts as one of the best remedial agents, when properly used, in diverting the strain from the nervous system and affording exercise to the muscles, thereby equalizing the circulation and nutrition, when carried to the extreme of a century run or a twenty-mile race, it brings such a strain upon the nerve-centers as

to place the latter in danger of total wreck. The man who comes out victorious in a twenty-yard dash or a twenty-mile bicycle race is not the man of tremendous muscle, but one who has his nervous apparatus so thoroughly trained that in the one case he can throw all his power into an almost momentary effort, and, in the second, can set his motor machinery at a certain pace and hold it there with the regularity of a clock throughout the requisite time. This abnormal strain upon the nervous system is the dangerous element in the use of the bicycle. No one who witnessed the twenty-mile bicycle race at Manhattan Beach on Saturday last could restrain his admiration for the careful training and wonderful nerve of the victor, who was able to maintain a two-minute pace for twenty miles; but to the careful observer there was steadily growing, with every lap of the course, in the expression of the rider's face, the protruding, glassy eye, the drawn features, the gaping mouth, which indicate an intense strain and has come to be recognized as the "bicycle face." No organism can endure such over-exertion with impunity. A penalty commensurate with the crime must be paid sooner or later. The less fortunate competitor in this race received his warning promptly and retired from the course at the end of the sixth mile with a stitch in his side.

A still greater abuse, because it is indulged in by a greater number of people, is the so-called "century run," and the still later innovation of the "double century," which was recently undertaken by forty-six riders from New York, thirty-five of whom accomplished the two hundred miles in twenty-three hours. Against such suicidal feats, it becomes the duty of the profession to speak with no uncertain voice.

Professional athletes, whose business it is to develop their muscular and nervous systems for extraordinary feats, are not the proper guides for the great mass of bicycle riders. The latter are composed of professional people and the great class of in-door workers of manifold callings. In them the muscles are soft and flabby, the heart unused to prolonged exercise, and the nervous system already tired from close application. To them, when properly used, the bicycle proves an unalloyed blessing. The exercise it affords appeals to a goodly number of muscles and to all the senses. The mind is diverted by

the constantly changing scenes and sights, the delights of comradeship are begotten, and the invigorating sense of the bounding pulse of full animal life and power is experienced. But the exercise should not be carried so far as to interfere with a proper, healthful reaction; and this should be free from all sense of exhaustion.

## ECHOES AND NEWS.

*New Use for the Roentgen Ray.*—It is reported that in France the Röntgen ray is employed to detect smuggled goods upon the persons of suspected individuals.

*A Johns Hopkins University Appointment.*—The trustees of the Johns Hopkins University have appointed Dr. John M. T. Finney to be associate professor of surgery.

*The Association of Military Surgeons.*—The eighth annual meeting of the Association of Military Surgeons of the United States will be held in Kansas City, Mo., June 1, 2, and 3, 1898.

*A Statue to Pirogof.*—A statue to the eminent surgeon Pirogof will be unveiled at Moscow during the meeting of the International Medical Congress. It is the work of the sculptor, Mr. V. R. Sherwood.

*Drs. Munde and Da Costa Honored.*—Dr. Paul F. Mundé of New York has received the honorary title of LL.D. from Dartmouth College. The honorary degree of LL.D. has been conferred also by Harvard University upon Dr. J. M. Da Costa of Philadelphia.

*Autopsy on a Bridge-jumper.*—The autopsy made at the Brooklyn morgue upon the body of Keeble, who lost his life in jumping from the Brooklyn Bridge, showed that death was due to drowning. With the exception of three ribs, no bones were broken.

*The Hull Biological Laboratories.*—The Hull Biological Laboratories of the University of Chicago were formally dedicated on the 2d inst. The address was made by Professor William H. Welch of Johns Hopkins University. The subject was "Biology and Medicine."

*A Hospital for the Medical Department of the University of Iowa.*—The Board of Regents of the University of the State of Iowa has appropriated nearly \$150,000 for the construction and equipment of a hospital in connection with the Medical Department of the University.

*The American Association of Obstetricians and Gynecologists.*—The tenth annual meeting of the American Association of Obstetricians and Gynecologists will be held at the Cataract House, Niagara Falls, Tuesday, Wednesday, Thursday, and Friday, August 17, 18, 19, and 20, 1897.

*Delegates to the Montreal Meeting.*—Dr. Frederick Holme Wiggin of New York City has been appointed by the New York State Medical Association, and Dr. J. Riddle Goffe by the American Gynecological Society as delegates to

the British Medical Association meeting at Montreal, August 31 to September 3, 1897.

**International Congress at Moscow.**—The "Oto-Rhino-Laryngological Society of Moscow" will open an information bureau in the Doctors' Club (Bolshaya Dmitroffka), and in Section XII. during the meetings, for the convenience of members of that section attending the International Medical Congress at Moscow.

**The Prince of Wales' Hospital Fund.**—A letter in the London *Times* asks for more subscriptions to this fund. The annual subscriptions at present consist of \$100,000, contributed by less than 5000 households, instead of \$562,500 contributed by 225,000 households, as expected. The deficiency is attributed to lack of thought, rather than to lack of means.

**Attorneys for State Hospitals.**—Last winter a law was passed by the New York State Legislature providing for the appointment of an attorney for every State hospital. Heretofore all legal work has been done by the Attorney-General's department. The Lunacy Commission has lately announced its selection of hospital attorneys, all of whom are to receive a salary of \$1200 per annum.

**Railway Fares and the British Medical Association Meeting.**—The Canadian Pacific Railway Company will issue first-class return tickets to members of the British Medical Association from Toronto to the Pacific Coast, at a rate varying between \$61.80 and \$70.30, according to the route selected. This is less than a single fare and the tickets are available from July 1st to October 1st.

**Scarlet-Fever Germs in Plunder.**—News comes from Bloomfield, N. J., that thieves recently entered the yard of a dwelling in Montclair and stole a quantity of clothing and bedding which had been placed there. Fears are entertained lest this may be the means of causing a small epidemic, for the clothing and bedding had been used by a scarlet-fever patient, and were to have been burned.

**She Rides a Cycle at Three.**—Birmingham, Ala., claims to have the youngest cyclist in the United States in the person of a three-year-old girl. She began to ride when she was only two years and five months old, and in a month rode well. The wheel she rides is just fourteen inches high, and was made especially for her. The child's baby sister is to be taught to ride when she is two years of age. Comment is unnecessary.

**Board of Education and Oculists.**—The Board of Education of the City of New York has adopted a resolution providing for the employment of oculists to report upon the best colors to be used in painting and decorating school-rooms with reference to their effects on the eyesight of children. Drs. Chas. Stedman Bull, Henry D. Noyes, and Emil Gruning have been selected to act in this capacity.

**Dual Mentality.**—An unusual case of dual mentality has been reported by Dr. William A. White of the State Insane Asylum at Binghamton, N. Y., the subject being a girl of thirteen suffering from acute hysteria. The patient

was shown at a recent meeting of the Broome County Medical Society, and experiments were made demonstrating the dual condition of the mind and the existence of a sub-conscious state.

**Final Decision in the Fayerweather Will Case.**—On July 6th the Supreme Court of New York State issued its final decision in the Fayerweather will case. The executors were required to distribute within ten days the three million dollars in question to the twenty colleges to which they were bequeathed. The various hospitals that were hopeful of recognition under the will are, therefore, debarred from all participation in the benefits of this great fortune.

**Military Surgeons of New Jersey Meet.**—The annual meeting and dinner of the Order of Military Surgeons of New Jersey was held on the 15th inst. at the club house of the New Jersey State Rifle Association. The following officers were elected: President, Major William J. Parker, Fourth regiment; vice-president, Major H. C. H. Herold of Newark; secretary, Major David Strock, Sixth regiment; treasurer, Captain Roy Inglis, Hospital and Ambulance Corps.

**Plague in Hawaii.**—The report comes from Washington that there is danger of the bubonic plague being introduced into Hawaii from Japan, where the disease has been carried from its latest colonial acquisition, Formosa. The United States has been warned that its assistance will be required to prevent the landing of infected Japanese, if their demand for admission to Honolulu is enforced by a display of arms such as has just been threatened, and special instructions have been cabled the American sanitary officers in Japanese ports.

**Practical Results of Koch's Rinderpest Inoculation.**—It is stated by the secretary of the Pretoria Agricultural Society that Professor Koch's results are better than they are said to be. In hundreds of cases the method has been carried out successfully, and the failures which have occurred are due to the impossibility of making the ignorant Boer carry out instructions. He does not think, however, that it is possible to stamp out the disease by this method, as it is impossible to inoculate the hundred thousands of cattle belonging to the natives in isolated districts in various parts of the country. Moreover, he says that the disease is carried from farm to farm by the aasvogel, a species of vulture, which feeds upon the carcasses.

**Cowardice of Greek Army Doctors.**—Dr. S. C. Zavitziano was sent to Constantinople some months ago as a delegate from the United States to the International Sanitary Commission, and subsequently, at the request of the Marine Hospital Service, traveled through Greece to investigate the treatment received by the Greeks who were wounded in the war with Turkey. He declares that the Greek Red Cross has not been of any assistance, and the same is practically true of the sanitary service of the Greek army. To substantiate his charge of cowardice, he says that the hospitals of Larissa and Tirnova, two of the five hospitals for wounded established at the beginning of the war, were abandoned to the Turks by the physicians. The excuse



offered was that the Turkish army had fired on the Red Cross Hospital at Arta.

**Photographing the Stomach.**—Dr. Edward O. Schaaf of Newark has invented an electric light and camera for photographing the interior of the stomach. The invention is intended to assist in diagnosing obscure ailments, such as cancer of the stomach. He states that two weeks ago he was able to successfully photograph the interior of the stomach in a living person, and obtained a perfect picture of the pyloric mucous membrane. The great difficulty is in properly focusing the membrane. In the experiments upon dogs anesthetics were used, but the pictures obtained were unsatisfactory. The explanation of this lay in the movements of the stomach. The organ ascended and descended with the diaphragm at each expiration and inspiration. This trouble was overcome when the camera was introduced into the human subject, the patient holding his breath during the exposure of the film. No narcotics are required in individuals, there being no pain connected with the operation. Only five to eight-seconds' exposure to the electric light is necessary, and for this length of time a patient can easily suspend respiration.

**Diamond Jubilee Honors.**—Among the medical men upon whom jubilee honors have been conferred are the presidents of four large institutions. A baronetcy was conferred on Dr. Samuel Wilks, President of the Royal College of Physicians of England, who has long been known as one of the founders of pathology. A baronetcy was also conferred on Sir William MacCormac, President of the Royal College of Surgeons of England, who was knighted in 1881 in recognition of his services as Secretary-General of the International Medical Congress of that year. The honor of knighthood was conferred on Dr. George F. Duffey, President of the Royal College of Physicians in Ireland, in which he now holds the Chair of Pharmacy as well as that of *Materia Medica*. Mr. William Thomson, President of the Royal College of Surgeons in Ireland, was also knighted. He was the first Secretary-General of the Royal Academy of Medicine in Ireland and held office fourteen years. The honor of a baronetcy was conferred on Mr. Thomas Smith, Surgeon-Extraordinary to the Queen, who is senior surgeon to St. Bartholomew's Hospital, with which he has long been connected. Dr. William Gowers, upon whom knighthood was also conferred, is well known as an investigator of the nervous system whose writings are familiar to physicians all over the world. Dr. Felix Semon was knighted also in recognition of his labors in extending the application of a special knowledge of laryngology by physiologic and clinical investigations. Dr. Thorne-Thorne, C.B., was promoted to be a Knight Commander of the Most Honorable Order of the Bath (civil division). He is lecturer on Public Health at St. Bartholomew's Hospital, where he received his medical education. And Dr. W. M. Haffkine was appointed a Companion of the Order of the Indian Empire in recognition of his well-known labors in India for the prevention of cholera and plague by inoculation.

## CORRESPONDENCE.

### THE WOODBRIDGE TREATMENT OF TYPHOID FEVER.

To the Editor of THE MEDICAL NEWS.

DEAR SIR: In the abstract of Dr. Upshur's paper in your issue of June 5th ult. these words appear: "The testimonials which had been filed regarding the efficacy of the treatment ('Woodbridge's method') were of no more value than similar testimonials for some 'cancer cure' or 'kidney cure,' and other 'cures' *sui generis*." The testimonials given out by shameless "cancer and kidney" quacks are the endorsements of their ignorant and deluded victims, generally paid for in service or with salve, and are usually wheedled out of them after a short term of treatment, while they imagine themselves improving and are often published after the giver is in his grave. What are the "testimonials" which Dr. Upshur says are of no more value than these? In 1893, after twelve years of experience which had taught me that typhoid fever *could* be aborted, I made the announcement which was in conflict with all recognized teaching, and published the method which, according to the most advanced thought of the best thinkers, was irrational and unscientific, hence my theories were received with sharp criticism, with positive dissent, and sometimes with violent personal abuse. But a few hundred physicians were possessed of sufficient intelligence to realize that no sane man would promulgate ideas which were certain to be bitterly antagonized until he was absolutely sure that his position was impregnable, and they wrote to me for exact and definite instructions and followed them, and they were soon so amazed at the results which were obtained that they began writing to me in most eulogistic terms of their success, sending me clinical charts and reports of cases. At the last meeting of the Ohio State Medical Society, held in this city, I presented a paper of about 150 pages of closely typewritten brief quotations from these laudatory reports, many of which were accompanied by clinical charts of the cases. The reports included every case and every death as far as I knew which had been treated by the method I have advised, or any modification of it, and dealt with 5449 cases treated, with 105 deaths. Since I read that paper, on May 21st, I have received more than two hundred letters reporting 2408 additional cases treated, with 45 deaths. The record now stands, therefore, at 7857 cases of typhoid fever treated, with 150 deaths, a death-rate of 1.90 per cent., and an average duration of illness in the 4935 cases in which it was given of 12.7 days.

The clinical charts or histories show the most careful and painstaking observations, and that every procedure known to science was called into requisition to verify the clinical diagnoses, and that every possible effort was made to exclude errors of this sort and of judgment. They show that hundreds of cases were treated in hospitals and were carefully watched by different physicians, and that the treatment was instituted in hundreds of cases in which the patient recovered after other methods had

failed, and in many after the patients were considered beyond all human help. It is these reports of cases and the expression of these most highly commendatory opinions, which have been based upon the bedside experiences of hundreds of physicians, including many men of the highest social and professional standing, that Dr. Upshur stigmatizes as "testimonials of no value, etc.," and compares with the endorsements given to quack salvers.

Dr. Upshur says he has not used this method of treating typhoid fever, which he severely arraigned, "because he regarded his patients as of too much consequence to be subjected to such dangers." That is, he considers them of "too much consequence" to apply a method of treatment which has resulted in saving all but 1.90 per cent. of the 7857 cases in which it has been tried, besides saving their constitutions the strain of protracted and severe illness, but they are not of too much consequence to be subjected to "symptomatic or expectant" treatment, with its death-rate of fifteen to twenty per cent. and its six-weeks' duration of illness, or for him to sanction "small doses" of always deleterious and generally dangerous phanacetin!

Yours truly,

JOHN ELIOT WOODBRIDGE.

CLEVELAND, Ohio, July 9, 1897.

#### A REPLY TO DR. LEFFINGWELL.

To the Editor of THE MEDICAL NEWS.

DEAR SIR: I have read with much interest the letter of Albert Leffingwell, M.D., in which he criticises your editorial of July 3rd on the bill before Congress restricting animal experimentation in the District of Columbia. It is astonishing to me that any man who values his reputation for intelligence, candor, and carefulness of statement, can make the assertions contained in his letter. He pretends that he would view with disfavor any bill destined to prevent all animal experimentation, and yet we find him associating with, assisting and the chief exponent of those whose object and constant effort is to secure the prohibition of such experimentation.

Dr. Leffingwell says of this bill: "I do not believe that if it becomes a law, it will, in the slightest degree impede any form or phase of useful investigation." The president of the Washington Humane Society could devoutly turn his eyes to Heaven and say the same thing, even though he knew the bill would absolutely abolish vivisection, because he holds that *no form or phase of vivisection is of any practical value to science or medicine.*

Let us see if Dr. Leffingwell's assertions concerning the effect of this bill are borne out by an examination of the text of the bill. He says:

"It now permits all phases of inoculation experiments, all tests of drugs, of poisons, or of methods of surgical procedure. Does it? What does this general provision in Sec. 2 mean? "The experiment must be performed with a view to the advancement by new discovery of physiologic knowledge, or of knowledge which will be useful for saving or prolonging life or alleviating suffering." What proportion of the experiments are made

with a view to *new discovery*, and what proportion are made to confirm discoveries already made or to apply them under variable conditions? In my opinion, and I have had nearly twenty-years' experience with this class of experimentation, this one little paragraph would, if strictly construed, cut off nine-tenths of the useful experiments which are made upon animals. Senator Gallinger, who fathers the bill in the Senate, says this paragraph will not bear this limited construction, but if it does not, why was it put in the bill? It is a principle of law that everything in a law was put there for a purpose. As a matter of fact, the paragraph in question is taken literally from the British antivivisection bill. The framers of that bill believed it would have the full effect which its wording implies, and they inserted another paragraph specifically permitting experiments to test former alleged discoveries. Why was that paragraph left out of the bill which Dr. Leffingwell helped to perfect? Is not the British bill sufficiently harassing and destructive to experimental research?

This bill lays down a number of general conditions according to which experiments may be made, and prohibits all other forms of experiments. These conditions are so shrewdly formulated that, while superficially they do not appear very harmful, the practical experimenter can see that there are very few lines of research which could be carried to successful completion without violating some provision of the bill. For instance, we could not carry out ingestion experiments, inspiration experiments, cohabitation experiments, or exposure experiments, with a view of transmitting a contagious disease and determining the conditions under which the contagion is active. The bill in all such cases makes the prohibitory requirement that the animal shall be completely anesthetized during the whole of the experiment. Again, the ridiculous restrictions concerning experiments made upon horses, asses, mules, dogs, and cats would very nearly prohibit experiments upon these animals. That is to say, the wording of the certificate which must be given, to the effect that the experiment "will necessarily be frustrated unless it is performed on one of these animals" and that "no other animal is available for such experiment" would prohibit many such experiments. It might be much more convenient to use one of the animals named, much less expensive, much more conclusive, and yet some other animal might be available. Again, the delay of a week before the certificate becomes available would prohibit more than half of the original investigations such as I have seen made with these animals. Experiments with contagious diseases, at least, are often planned after the material for them is obtained, and they must be performed at once, or the material undergoes decomposition and is lost. Such experiments cannot be foreseen, and consequently the required certificate cannot be given a week in advance. If to this delay is added the time and trouble required to obtain the signatures of three physicians in active practice and of a professor of a duly established reliable medical school, it is seen that there is here again a very serious prohibition. I am writing as a specialist whose studies are for the most part limited to contagious

diseases. The specialists in other lines of research, such as general biology, physiology, and surgery, feel that they will be almost equally affected. Now, if nine-tenths of the experiments on the pathology of infectious diseases are prohibited by confining such investigations to work for *new discovery*; if a part of the remainder are prohibited by stopping ingestion, inspiration, cohabitation, and exposure experiments; still another part by practically preventing experiments on horses, asses, mules, dogs, and cats, what proportion have we left? More than this, no one can tell how many other lines of experiment will be found prohibited when the bill is actually enforced, if such a catastrophe should ever occur.

With the provisions of the bill a matter of record, how can Dr. Leffingwell truthfully assert that the statements in your editorial in regard to preventing and abolishing animal experimentation in the District of Columbia are "wholly without basis of fact?" Has he read the bill? Does he understand the English language? If so, what is his estimate of the readers of *THE MEDICAL NEWS*?

The cruelties and abuses of vivisection have been exploited to the fullest extent by Dr. Leffingwell and his antivivisectionist friends, but they have shown no good reason why a different standard of cruelty should be applied to the scientists from that which is applied to the rest of mankind. For all time, it has been admitted that it is not cruelty to cause animals pain where the motive justifies the act. We whip horses to make them obey; we castrate cattle, sheep, swine, and fowls, for economic purposes; we saw or cut off the horns of cattle to prevent them injuring each other; we perform painful surgical operations on animals for purely financial considerations, and in each case we allow the courts to decide whether or not the circumstances of the individual case were such as to constitute cruelty. The bill which Dr. Leffingwell advocates provides that an experiment made with the best of motives, for the most sacred purpose, is cruelty unless performed in a certain prescribed manner and under rigid conditions. It leaves no discretion to the courts to decide whether there is or is not malicious cruelty. In other words, it enacts that certain experiments are cruel, and that the scientists who perform them are criminals whether or not the circumstances of the case justify such a finding.

The language quoted from Dr. Gould may or may not have been founded upon good reason. It suggests to my mind the probability that he had just been reading some of the vivid and soul-harrowing antivivisection literature which is now so abundant. But admitting all that he says, shall we permit the foes of all experimentation to sit in judgment upon our experimenters and say that this man has proper "training and method," and that man is working "only in the interest of vanity?" Have not the antivivisectionists abused in the most unqualified terms some of the greatest scientists that have ever lived? Would they not have stopped the work of Pasteur, Koch, and all of their disciples? Is not a great part of their literature devoted to the task of showing that no discoveries of value have been made by experiments upon animals? Have not the men who made

the greatest discoveries in all departments of science been looked upon as vain, visionary, and deluded, until their demonstrations were complete? No one can foretell who among our scientists will make the great discoveries; no one can tell whose method of investigation is right or wrong; no one can say that an experimenter is actuated by vanity alone, and it would be an outrage on personal liberty and disastrous to scientific advancement to permit any one to make discriminations for any such alleged reasons. What would have become of Morse and the electric telegraph if his methods, motives, and the results he expected to accomplish had been put to such a test. Let science be untrammelled; let research be free; punish only for the crimes which are actually committed, and let us not be led into foolish and harmful legislation by the distorted accounts of experiments in European laboratories, or the mere assertion that experiments are made without sufficient reason here. Every scientific man knows that more experiments fail than succeed in all branches of science; who, therefore, but the experimenter can say whether there was or was not justification for any particular experiment that has failed to yield expected results?

It is not my purpose, however, to favor experimentation or demonstrations by persons whose education does not fit them for such work. I am as much opposed as any one can be to demonstrations by vivisection in the common schools, or to any form of malicious cruelty. Any one who reads the literature of the antivivisectionists can easily satisfy himself, however, that their criticisms are for the most part directed against qualified men, physicians, physiologists, biologists, etc., and it is such men that they are trying to reach by this legislation. All others who conduct painful vivisections can be punished under existing laws. Very respectfully,

D. E. SALMON, D. V. M.

WASHINGTON, D. C., July 19, 1897.

#### OUR VIENNA LETTER.

[From our Special Correspondent.]

A BUST OF BILLROTH FOR THE UNIVERSITY—AUSTRIAN STUDENT "BUMMELS," DUELLING, ETC.—PLACENTA PREVIA TOTALIS CENTRALIS—PREGNANCY IN AN UNDEVELOPED UTERINE HORN SHUT OFF FROM THE CERVICAL CANAL—SURGERY AND HYGIENE IN CONNECTION WITH THE GRÆCO-TURKISH WAR.

VIENNA, July 5, 1897.

A HALF length figure of Billroth has just been set up beneath the arcades of the University. The memorial to the great surgeon finds a fitting place among the effigies of the other great representatives of scientific medicine in Vienna—Van Swieten, Hyrtl, Schuh, Bruecke, Hebra, and Braun. The figure of the grand old man is very lifelike and characteristic, as he is represented in his surgical gown with scalpel in hand. The formal unveiling is not to take place until the busts of certain other noted University professors, as Werner and Endlicher, have been placed in position, when there is to be an elaborate ceremony.

The University arcades have lost some of their time-



honored traditions, and will cease to have the place in student memories which they have possessed time out of mind, in consequence of a recent decision of the University faculty. It has been the custom for students on Saturdays, when very few lectures are given, to assemble beneath the arcades and promenade there with friends. A perfectly innocent pastime, one might well imagine, and one not calculated to draw down the displeasure of the faculty; but the members of the different student societies usually kept by themselves and glared and cracked jokes at the expense of each other, and the result was student riots and student duels. Here, as in Germany, one frequently meets with the little round vari-colored peaked caps of the duelling fraternities, and most student faces bear scars, some of them recent enough. Not so often among the medical students perhaps as among the others are the society badges and caps noticeable, but almost without exception the faces of the medical assistants in the general hospital bear traces of scars, some of them keloid enough in character to suggest the truth of the remark which has been made that irritants are sometimes deliberately applied to such wounds when recent to make the resultant scar more noticeable.

The Saturday promenades at the University being forbidden (student "*bummels*" as they were called) there has been a noticeable restlessness in the student body during the present semester, as if there were pent-up energies seeking a vent somewhere. At first the faculty prohibition of "*bummeling*" was scarcely taken seriously, and there were Saturday demonstrations at the University. These were promptly put down by the University authorities, and the police department was called upon to enforce faculty regulations. Then there were some demonstrations on the streets and in the parks. About this time the Austrian Reichsrath passed a bill making the use of the Bohemian or Cjeckish language legally obligatory in certain parts of the Austrian Empire. This could not fail to be displeasing to the German students at the University and a lot of the pent-up energy found a vent in a series of meetings in which vigorous protests were made against this putting a despised Slav tongue on a level with their beloved German. The protests culminated just before the adjournment of the Reichsrath in a stormy demonstration by a large student body in the Parliament buildings which required police interference.

There is a good deal of carping criticism at times in America of the amount of attention which is devoted, with the approval of University authorities, to athletics. The critics would find much more reasonable grounds for criticism of the methods generally in vogue at European Universities which the rising generation make use of for the expenditure of surplus youthful energy. The healthy, hearty out-door exercise, with ample opportunity afforded for the utmost expansiveness of superabundant vitality is replaced here by the hilarious drinking parties in the cafés and beer-gardens that too often degenerate, notwithstanding proverbial German student capacity for beer, into drunken revels. The healthy, manly competition of the athletic field, and the training which brings with it precious habits of self-restraint, full muscular de-

velopment and invaluable exercise of the faculty of keeping one's temper are represented in university life only by some monotonous in-door exercise, very slightly indulged in, and the brutal and brutalizing practice of duelling, which neither the ridicule of foreigners nor the growing popular disapproval of it have so far been able to eradicate.

Two of the recent finds in the *post-mortem*-room are interesting as indicating the teachings of the Vienna school of pathology on certain points in obstetrics which are sometimes subjects for discussion. The section of a patient who died from placenta previa revealed the fact that the placenta had been adherent at every point around the internal os. On theoretical grounds it is sometimes urged (it is the teaching of at least one French school of obstetrics) that as the placenta must begin its growth at some point lateral to the internal os it will always remain so, and cannot become a central placenta previa. As a matter of observation the *post-mortem* shows that there have been placental adhesions all around the os, and that penetration into the uterine cavity could only be effected by separating placental and uterine tissues.

A case of pregnancy in a rudimentary horn of a bicornute uterus, where the accessory uterine cavity was completely shut off from communication with the cervical canal, was another demonstration of the wonderful motility of the spermatozoa. Here there seems no question but that the fertilizing element found its way up the only Fallopian tube open to it and thence through the general peritoneal cavity to the ovary of the other side. From here the impregnated ovum descended the tube of its own side into the closed cavity of the rudimentary horn. Such cases are not so extremely rare in literature, but the visible demonstration of what seems almost palpably impossible was extremely interesting.

Austria is so thoroughly on a war footing, and military matters always attract so much attention that the recent Græco-Turkish war could not fail to be of interest in medical as well as army circles. There has been considerable dissatisfaction expressed at the surgical and hygienic arrangements of the sanitary corps during and after battles. Modern scientific methods were not applied as effectively as might be expected in accordance with the advances during the past twenty years. A great deal of attention has been devoted to military surgery and hygiene since the Franco-German and Russo-Turkish wars, and it seems too bad that the first European war since then should not have demonstrated the value of the work done. Some complaints were expressed, too, regarding the attitude of the voluntary nursing associations, even the perfect neutrality of the Red Cross not being always above suspicion. Christian (?) feelings were sometimes thought to have led to the demonstration of preference to take care of fellow Christians and let the Turks shift for themselves. The subject has aroused renewed interest in the section of military surgery at the coming International Congress at Moscow, where some very important questions are to be discussed. Among them being "The Organization of First Help," "What Primary Bandage for Shot-Wounds is Preferable?" "What

Is the Most Suitable Apparatus for the Treatment of Bullet Fractures?" and "How Can a Supply of Healthy Water be Best Supplied for Use on the Battle-field?"

### OUR PHILADELPHIA LETTER.

[From our Special Correspondent.]

THE WORK OF THE SANITARIUM ASSOCIATION OF PHILADELPHIA—THE PREVALENCE OF "BABY-FARMING"—STATE AID FOR PENNSYLVANIA INSTITUTIONS—VITAL STATISTICS FOR THE WEEK ENDING JULY 17TH.

PHILADELPHIA, July 17, 1897.

SITUATED at Red Bank, on the New Jersey side of the Delaware river, just below the city, are the grounds and buildings of the Sanitarium Association of Philadelphia, a corporation having for its aims the prevention of disease and the alleviation of suffering among the poor children of the community, by giving them a day's outing in a spot where an abundance of shade trees, and an almost constant river breeze are exchanged for the heat of the city streets and the stifling atmosphere of the slum districts which cause such an excessive mortality in young children. The Sanitarium is open each week-day from June to September, and places no restriction on the number or length of the visits made by the poor. Hourly trips are made to the grounds by two steamboats, the property of the Association, which carry on an average of twenty-five hundred children and their caretakers daily. Here, after a short river ride, which is in itself of no small benefit, the alley-bred children and their elders may look forward to a day of recreation and rest, with plenty of good food for the caretakers, and pure, sterilized milk for the little ones. Large bathing pools for both sexes are provided, and a dispensary for the sick ones is maintained.

The plant of the Sanitarium also includes a children's hospital of commodious size and excellent appointments, which has accomplished valuable results in the past in the treatment of the ailments peculiar to early life. Three hundred or more cases are treated in the hospital during each season, with an exceedingly low mortality, considering the class of patients, and their uniformly poor physical condition.

Beginning in a small way in 1877, the work of the Sanitarium Association has grown and developed in accordance with the demands made upon it, until at the present time, after twenty-years' unremitting and inestimably valuable work, it has become a large factor for good among the class of the community for whose benefit it was intended. Nearly 180,000 children were received during the last season at Red Bank, a large percentage of whom otherwise would have been doomed to suffering and death.

The publicity recently given to the methods pursued in her business by a notorious midwife of this city again directs attention to the existence of these cheap lying-in establishments, with their insinuating advertisements in the public press, of "best care for the mother before and after confinement", and of the boarding and "adoption" of infants. In spite of the fact that the proprietresses of these establishments are utterly ignorant of the first prin-

ciples of the act of parturition, that, for an extra consideration, they do not hesitate to so manage that the unhappy infant handed over to their care shall die of starvation, if the parent does not want to be bothered with the care of the child, and that most of them are on a moral level with public abortionists, if, indeed, they do not sometimes dabble in this trade when circumstances are favorable—in spite of such truths as these, and in the pronounced opposition of the medical profession, these women continue to follow their business, and to obtain from the authorities legal certificates allowing them to do so. And they will continue it just as long as a demand exists among certain classes to escape the consequences and shift the responsibilities of maternity, regardless of the fate of their offsprings; and just so long as the sexually indiscreet continue to find in these establishments a refuge in time of trouble, will legal measures and the sentiment of the better class of the community be powerless to prevent the evil.

And so "baby-farming," with the alarming mortality among its innocent victims from that convenient disease "marasmus," continues to flourish in this enlightened era of medical progress, and it bids fair to exist until laws shall have become more than mere written statutes, or until the community shall have experienced a revulsion of morals. But the latter would be a miracle, and miracles do not come to pass at the close of the nineteenth century.

From Harrisburg comes the announcement that appropriations to institutions not fully under the control of the State and to private institutions will not be acted upon finally until ample time has elapsed for a thorough inquiry into their several needs. This simple announcement may be taken to mean that the hospital appropriation bills of this year will be rushed through the legislature with less haste than is the usual custom in dealing with such items, and that many boards of hospital managers through the State are less certain this year than they have been in the past of expanding their institutions on lines limited only by the generosity of the Commonwealth. In this annual scramble for funds many an honest and deserving charity suffers, while the political dexterity of some totally un-called-for institution secures for it a tidy sum for "improvements."

Already the supply for hospitals far exceeds the demand, and it would be a sound business principle to reduce their number. But business principles and hospital boards are rarely compatible, so we must continue to look for this yearly rush for money by the deserving and undeserving alike, losing sight of the deleterious effect which this fostering of hospitalism must have upon the income of the general practitioner, not to speak of the moral injury many an otherwise truthful hospital manager must sustain in picturing to an impressionable house of legislature the "pressing claims" of his institution.

The number of deaths in Philadelphia for the week ending July 17th was 528, an increase of 22 over those of the preceding week; of the total deaths, 270 occurred in children under five years of age. The principal causes of death were tuberculosis of the lungs (46), diseases of the

heart (16), pneumonia (22), and cholera infantum (112). The returns of contagious diseases for the week were as follows: 73 new cases of diphtheria, with 14 deaths; 59 new cases of scarlet fever, with 4 deaths; 46 new cases of enteric fever, with 5 deaths. The total number of new cases of contagious diseases numbered 10 more than those of last week, with a decrease in the mortality of 18.

#### TRANSACTIONS OF FOREIGN SOCIETIES.

##### Paris.

SATISFACTORY RESULTS FROM CALOT'S REDRESSEMENT BRUSQUE—HYPERTROPHY OF THE PROSTATE RELIEVED BY PROLONGED CATHETERIZATION—NEPHROTOMY FOR HYDATID CYSTS OF THE KIDNEY—RECURRENT FRACTURE OF THE PATELLA—CASES OF DEATH FROM BICYCLE RIDING—THE TREATMENT OF MUCOMEMBRANOUS COLITIS.

AT the session of the Academy of Medicine, held June 8th, MONOD acknowledged that *in Potts' disease good results seem to be obtained by forced reduction (redressement brusque)*, but that time will be required before the ultimate value of this operation is known. In certain cases no attempt at reduction should be undertaken. Such are those in which the reduction, if successful, would leave a gap in the vertebrae too great for subsequent consolidation. Thus, in cases in which the deformity has existed for four or five years or more, forcible reduction exposes the patient to the danger of rupture of the meninges, hemorrhage, tuberculous infection, etc. On the other hand, in deformities which have existed only five, seven, or nine months, reduction usually can be made without trouble.

PEAN expressed himself as satisfied with the operation. One young girl who suffered from paraplegia, due to a deformity about two years old, recovered complete use of her limbs after forcible reduction.

VERGER thought that paraplegia is not sufficient indication for this treatment, as the paraplegia of the lower limbs occurring in Potts' disease often disappears spontaneously.

BAZY has treated several *patients suffering from hypertrophy of the prostate and its attendant evils by the introduction of a catheter*, which is left in place for several weeks, the patients being allowed to go about in the meantime. As a result, a marked atrophy of the prostate follows, and the unpleasant symptoms which are due to its increase in volume (retention of urine, cystitis, etc.) disappear.

At the session of the Surgical Society, held June 2d, HOUZEL described two operations performed by himself *for hydatid cysts of the kidney*. The first of these was a nephrectomy, which was carried out with difficulty and was followed by the death of the patient. In the other case a nephrotomy was performed, with satisfactory results, an operation which the speaker believed to be indicated in most similar cases.

PEYROT has removed one kidney for this cause, with a fatal result. Three other patients upon whom nephrotomy was performed recovered.

At the session of June 9th, PEYROT spoke of the *recur-*

*rent fracture of the patella*, which occurs in certain individuals who presumably have especially fragile bones. He recalled one case occurring in 1880, in a man aged fifty-four. The patella was again broken during 1883, 1887, 1888, and 1889. There existed no less than three lines of fracture in the patella, each being perfectly distinct. In another case, four or five days after the occurrence of the accident, he had sutured the broken bone anteriorly, with excellent result. Nine months later the bone broke again, and upon examination it was found that the suture had parted and a line of fracture was present passing through the fibrous callous. In another and similar case, the silver wire used for suture was broken at the time of refraction. In this case osseous union had taken place throughout the inner two-thirds of the line of fracture. Both of these patients were treated by passing a wire around the patella as a hoop is placed around a cask. The result was satisfactory.

LUCAS-CHAMPIONNIERE has operated fifty times for fracture of the patella, with four deaths—one from chloroform; one from contusion of the kidney, which had been overlooked; one from constant vomiting, the cause of which was not clear; and a fourth from infection, the case being a complicated one. The results in the other cases were most satisfactory. Only two relapsed, due to the fact that the fragments could not be accurately approximated. In no case was there a breaking of the suture such as described by Peyrot. The patients were allowed to go about in from ten to fourteen days.

At the Medical Society of the Hospitals, June 4th, PETIT mentioned *five cases of death occurring either during or immediately after a bicycle ride* and directly attributable to heart disease. Persons suffering from heart trouble ought to abstain altogether from this exercise or to take it with great moderation. The same is true of those of either sex suffering from tuberculosis of the lungs, and from diseases of the genito-urinary apparatus whether in an active stage or recently cured.

Before the Therapeutic Society, June 9th, MATHIEU discussed *the treatment of mucOMEMBRANOUS COLITIS*, making the following points: (1) One cannot hope to cure mucOMEMBRANOUS enterocolitis until the constipation, which is its dominant symptom, is made to disappear. (2) There usually exists an irritation of the large intestine which produces not only hypersecretion, but often hyperesthesia, as well as spasmodic contraction of certain zones of the colon. (3) This affection appears especially among persons of a neuro-arthritis or neuropathic temperament. (4) It is very common in women affected with visceral displacements or uterine troubles.

In treating the constipation, violent purges and drugs, such as aloes, which congest the rectal mucous membrane, are to be avoided. Hydrastis Canadensis, or hamamelis are of value. Sometimes regulation of the diet and habits of life are alone sufficient, while hydrotherapy, electricity, and massage give good results. Large rectal injections exert a favorable influence upon the mucous hypersecretion.

Among purgatives, castor oil, in doses of one-half or one teaspoonful, taken before breakfast for several suc-



cessive days, holds the first place, but cascara sagrada, with magnesia and bicarbonate of soda, rhubarb, senna, etc., are almost equally good.

Injections play an important part in the treatment, and they are best given by means of a bulb syringe, the object being to dislodge the fecal masses and adherent secretions. Either boiled water or a solution of bichloride of soda, 1 to 5000, salicylate of soda, 1 to 1000, or chlorid of soda, five per cent., may be used. If the stools are dysenteric, irrigation with a solution of nitrate of silver, 1 to 4000, will be found beneficial.

#### Vienna.

#### THE TREATMENT OF OBESITY BY THYREOIDIN—THE RELATION OF MUSCULAR SPASM TO DISEASES OF INFANCY.

At the session of the Medical Club, held May 26th, HIEBEL described the *results obtained in the treatment of obesity by thyreoidin*. The preparation was taken without difficulty, but often the patients experienced shooting pains in the extremities which lasted for twenty or thirty seconds. In only one instance was the ingestion of the medicine followed by a feeling of anxiety, palpitation of the heart, and headache, symptoms which continued for two days after it was discontinued. In general, the patients lost from two to three pounds a week. In the beginning of the treatment this loss was most noticeable upon the neck and chest, later upon the abdomen and upper extremities, and finally upon the lower extremities. In some instances, while a loss was taking place in the lower extremities, there was actually a gain in size in the region of the neck.

At the session of June 2d, ZAPPERT read a paper upon *muscular spasm in connection with diseases of infancy*. These spasms may be the result of intestinal affections, and also of pulmonary diseases or of septic processes starting from the umbilicus. The spasms may present either of two types, as illustrated by the following cases: An infant with congenital syphilis, pneumonia, and intestinal catarrh, held both arms and legs in a cramped position, but active motions were very slight. Passive motions were strongly resisted. The reflexes were marked. In a second case, of pneumonia, in a child aged seven days, there was tetany of the upper extremities, followed in three or four weeks by a relaxed condition and death. Examination of the chord in these cases showed marked degeneration of the anterior horns in the cervical and lumbar regions. In accordance with these facts, Zappert makes three groups of cases: (1) Various diseases of infancy produce changes in the anterior horn without clinical symptoms. (2) In other cases, tetanic symptoms develop. (3) In the third group are placed those cases in which the stage of irritation is followed by one of paralysis.

**A New Narcotic Discovered.**—The news comes from the City of Mexico that the physicians of the Insane Hospital for Women, in their efforts to discover some safe narcotic which would produce sleep, are using daily a simple remedy prepared from the seed of white zapote. It is said to produce a tranquil sleep.

## SOCIETY PROCEEDINGS.

### AMERICAN CLIMATOLOGICAL ASSOCIATION. THIRTEENTH ANNUAL MEETING.

*Held at Washington, D. C., May 5, 6, and 7, 1897.*

THE President, DR. E. FLETCHER INGALS of Chicago delivered an address in which, after some introductory remarks, he considered the antiseptic treatment and limitation of climatic treatment of pulmonary tuberculosis, showing in eight briefly reported cases that betterment sufficient to be commonly termed a cure may be obtained from antiseptic treatment. He believes that, aside from tonic and nutritive agents, antiseptics are the only medicines which have any power in checking the progress of tuberculosis, especially when used nearly to the point of saturation of the system in cases in the earlier stage. He prescribes the oil of cloves, beginning with five drops in capsules, followed by a glass of milk, and repeated from three to five times a day. He prefers the carbonate of creosote to creosote, or to guaiacol or its carbonate.

DR. FREDERICK I. KNIGHT read a paper on

#### THE CHOICE OF A SUMMER RESIDENCE IN NEW ENGLAND.

He mentioned three kinds of resorts by the sea: the Maine coast and the Beverly shore, the shore south of Cape Cod, the islands; and two in the country: the mountains, and the country not much elevated, but quite far north. After describing the particular features of these various resorts, with special reference to the winds and changes of temperature, he stated that in case all the members of a family are robust and free from individual contraindications it will in general be found best for those who spend most of the year inland to go to some part of the seacoast for the summer, and for those who live on the shore to go inland or to the mountains.

DR. BOWDITCH of Boston spoke of the stimulating effect of the coast, especially the island portion of Maine. He referred to the fogs and maintained that they are often of a dry character. He said that it may at first seem a misnomer to speak of a "dry fog," but anyone who has been in that region will understand the term. The light vapory mist which frequently drives in from the sea has no definite sense of moisture as it strikes the face and in the midst of it the air frequently feels dry. They are in marked contrast to the drenching fogs of the south shore.

DR. CHARLES D. ALTON of Hartford said that in visiting Nantucket some years ago he carried with him the belief that it might be an excellent place for patients with tuberculosis, but he found that among the natives and visitors numerous deaths occurred from that disease. He did not quite understand this until he began to appreciate some of the local features of the island and its meteorologic phenomena, especially the matter of fogs, as compared with the northern coast resorts. This shows how careful one should be to study the minutiae of localities that are approximate. Physicians often send their patients to California, and not being directed to any particular part of that state, they make a choice themselves of a locality and later are often compelled to seek

another spot on account of the unsuitability of the one first selected. Patients are sent into the Adirondacks without any definite directions as to locality, and one sees them living in close, hot hotel rooms where the conditions are most unfavorable.

DR. R. H. BABCOCK of Chicago spoke of the long winters and comparatively short summers met with in Maine, and said that this accounts for the high death-rate from phthisis, the inhabitants necessarily being confined within doors during a greater portion of the cold season.

DR. JOHN MADISON TAYLOR thought the disease less prevalent in Maine than formerly, owing to an improvement in the quality and quantity of food consumed. He considers the climate of Mt. Desert excellent for neurasthenics and melancholics.

DR. D. R. BROWER of Chicago presented a paper on

#### CLIMATE IN RELATION TO NERVOUS DISEASE.

Regarding neurasthenia, he said that the special and visceral forms of this disease do best, as a rule, in a marine climate. A sea voyage in a slow sailing vessel is often of the greatest service, as is a residence in a favorable marine climate, such as southern Spain, Algiers, the Riviera, or Italy for the winter, and Holland, the coast of England, Ireland, and the coasts of Norway and Sweden for the summer. The cerebral form of neurasthenia, as a rule, improves in an inland climate, and one of the best in the United States is that of Saratoga Springs, New York, especially in the case of those patients who have marked insomnia, constipation, and uricacidemia. The climatic conditions at Saratoga are eminently conducive to sleep. In cerebral neurasthenia, with no marked disorder of the circulatory system, the bracing air and abundant sunshine of the Rocky Mountains is often highly beneficial.

DR. JOHN MADISON TAYLOR then read a paper on

#### CLIMATE OR ENVIRONMENT AS A FACTOR IN THE REPAIR OF NEURASTHENIA AND MELANCHOLIA,

and was followed by DR. S. E. SOLLY who contributed one, entitled

#### THE COMPARATIVE MERITS OF RESORTS IN COLORADO, NEW MEXICO, AND ARIZONA.

DR. R. H. BABCOCK of Chicago then read a paper, entitled

#### A BRIEF CONSIDERATION OF SOME POINTS IN THE MANAGEMENT OF CONSUMPTION.

DR. KARL VON RUCK of Asheville read one on

#### THE CLINICAL VALUE OF THE CULTURE-PRODUCTS OF THE BACILLUS TUBERCULOSIS IN TUBERCULAR AFFECTIONS.

DR. FISK read one on

#### DIGESTION *versus* DRUGS IN THE TREATMENT OF PHTHISIS,

and DR. S. A. KNOPF, one on

#### AERO- AND HYDOTHERAPEUTICS IN THE PREVENTION AND TREATMENT OF PULMONARY TUBERCULOSIS.

#### REMARKS UPON THE TREATMENT OF TUBERCULOSIS BY THE ANTITUBERCULAR SERUM

was the title of a paper by DR. HINSDALE who reported the effect of the serum in a case of tuberculosis in which there had been hemorrhages, cough, loss of flesh and abundant bacilli. The improvement was marked and the bacilli disappeared. No unfavorable result accompanied the injections, which were given on alternate days in quantities varying from five to forty minims. The patient is still under treatment.

In discussing Dr. Hinsdale's paper DR. E. A. DE SCHWEINITZ of Washington said that a few years ago he undertook the study of the tuberculosis germs and found they contained about thirty or forty per cent. of fats. He then tried to separate the different acids, and discovered that the fats were glycerids, principally of palmitic acid and high and low melting acids. The germs he used had been attenuated purposely by artificial means. About the same time Dr. Trudeau had made experiments with an attenuated germ and noted similar results. Dr. Trudeau also found that the germs so attenuated were no longer capable of producing disease. Dr. de Schweinitz obtained some interesting results by first attenuating the germs and then inoculating guinea pigs with them and subsequently with virulent germs. In some instances complete immunity was produced.

The next idea to be carried out was the preparation of the antituberculous serum. For this purpose he used various animals—rabbits, guinea-pigs, cows, horses, etc., sometimes using attenuated germs and sometimes virulent ones, and at other times, tuberculin. The serum obtained from these animals was used to treat tuberculous guinea-pigs, with fairly satisfactory results. This serum has also been used by Dr. Stubbett of the Liberty, N. Y., Sanitarium, by Dr. Trudeau of Saranac Lake, and by Dr. C. W. Richardson of Washington. All have reported improvement as regards the effect of the serum on the patients.

DR. CHARLES F. GARDNER of Colorado Springs, read an elaborate paper on

#### THE DANGERS OF TUBERCULAR INFECTION AND THEIR PARTIAL ARREST BY CLIMATIC INFLUENCES.

DR. I. H. HANCE of Lakewood said that he had made a study of the infectiousness of dust, and had met with some rather surprising results. He had examined three rooms which were occupied by a large family, and had obtained ten square inches of dust from the room occupied by the mother, with which he had inoculated some guinea-pigs. Of the four inoculated pigs, three died of tuberculosis and one of an acute infection. He had also examined the dust in the Broadway cable cars, Elevated cars, and the Avenue C, and Houston Street surface cars in New York City. In the cable cars he had found a greater number of germs than in any cars in that city. The test was not a satisfactory one as it was merely a comparison of the number of colonies which grew on gelatin plates after an exposure of five minutes.

Dr. Hance said that he had used at least two hundred guinea-pigs in experimental work and by far the greater

number of these were found to be free from any tuberculous infection after they had been subjected to inoculation; only those were tuberculous in which he had reason to suspect the presence of the tubercle bacilli previous to inoculation.

DR. S. G. BONNEY of Denver read a paper, entitled OBSERVATIONS UPON PULMONARY TUBERCULOSIS IN COLORADO.

The following papers were then read in full or by title: Undeveloped Graves' Disease Simulating Simple Irritable Heart, by Dr. R. G. Curtin of Philadelphia; Turpentine as a Remedial Agent, by Dr. J. B. Walker of Philadelphia; Some of the Vagaries of Croupous Pneumonia, as seen in Central New York, by Dr. H. L. Elsner of Syracuse; Experiences in the Treatment of Diphtheria, by Dr. L. D. Judd of Philadelphia; The Treatment of Gout by Natural Mineral Waters, by Dr. C. G. Ransom of New York; Report on Mineral Springs, by Dr. A. C. Peale of Washington, D. C.; and Sunstroke, by Dr. W. F. R. Phillips of the U. S. Weather Bureau, Washington, D. C.

The Association then adjourned.

## REVIEWS.

DISEASES OF INFANCY AND CHILDHOOD. By L. EMMETT HOLT, M.D., Professor of Diseases of Children in the New York Polyclinic, etc., etc. Pp. 1117. New York: D. Appleton & Co., 1897.

It is seldom that we have experienced so much pleasure in the course of book-reviewing as in the case of this volume by Dr. Holt. The work is a credit to American medical authorship. Perhaps its most prominent characteristic is its intimate blending of wide personal experience with extensive knowledge of, and large use, of pediatric literature. In consequence the reader feels that, in the statements placed before him, he is made acquainted not only with the author's well-grounded views, but with the generally accepted opinion also. Another excellent feature is the clearness of arrangement and of diction, the author writing in a methodical, *ex cathedra* manner and subdividing what he has to say under convenient headings, so that it is an easy matter for the reader to find just what he wants. We note, too, a judicious use of illustrations where they are needed, there being more than two hundred contained in the book.

The apportionment of the pages to the various subjects seems, on the whole, to be very just. In the matter of giving references to medical literature, there is, perhaps, some cause for criticism. The author, it is true, does occasionally refer his reader to a foot-note, but these are infrequent and are not employed with any uniformity. For instance, in writing of "Winckel's Disease," the foot-note gives reference to Winckel's original article, and to the articles of two other writers, but under "Buhl's Disease," on the next page, no references at all are given, even to the original paper by Buhl. We are aware that there exists a great difference of opinion as to the advisability of admitting references to other literature, some

relegating these entirely to monographs and encyclopedias, but our own opinion is distinctly that they interfere in no way with the value of a work as a text-book for students, and that they are of extreme value to physicians who would wish to consult the writer quoted.

Examining the work a little more in detail, we notice among the contents of Part I. a chapter upon the Peculiarities of Disease in Children. Brief remarks of this nature occur in many other pediatric text-books, but we do not know of any work which equals Dr. Holt's in the treatment of the subject. A chapter on Diseases of the New-born is one which we always look at somewhat askance, although nearly every book of this character contains it. As a rule, a heterogeneous lot of subjects is grouped together, many or most of which could better be classified with other affections, but which are placed here merely for the sake of convenience or to avoid the problem of their proper classification. The present author has cut the number down somewhat, and we should be pleased to see it still further reduced. A large number of pages are devoted to "nutrition," including the study of infant-feeding, also to the diseases directly depending upon faulty nutrition. The remarks on feeding are intensely practical, particularly those upon the method of home-modification of milk for the infant's use. In Diseases of the Digestive Tract he has departed to some extent from the nomenclature most commonly employed, but the departure is all in the direction of increased accuracy, and is to be commended. Respiratory Diseases are very fully treated of, particularly pneumonia, which is illustrated by microphotographs and a colored plate. The section on Nervous Diseases is satisfactory, and that on the Specific Infections equally so. In the latter is exemplified the difficulty of classification which the modern study of infection has imposed upon writers. We refer to the fact that tuberculous bronchopneumonia is described here, while ordinary bronchopneumonia, likewise due to the action of germs, in all probability, and so often clinically indistinguishable from the tuberculous form, is placed under Respiratory Diseases. But this awkwardness of classification is one which the times force upon every author and which only time can remove.

The American practitioner who desires to be fully acquainted with what American pediatrics is accomplishing cannot afford to be without this volume.

A HAND-BOOK OF MEDICAL CLIMATOLOGY. By S. EDWIN SOLLY, M.D., M.R.C.S. Philadelphia and New York: Lea Bros. & Co., 1897.

ONLY those who have had occasion to hunt through libraries for literature relating to climatology can appreciate the value of a general work of the kind which Dr. Solly has given us. There has been a very large number of contributions regarding certain health resorts or climates, it is true, but many of these contain but little valuable information, and others are so prejudiced that they are nearly valueless. In any case, to be able to make a satisfactory comparison of the places and climates described requires a vast deal of reading. This, the author has done for us, and we receive the benefit of his



conclusions. He has made a careful study of the subject from the broad plane of medical climatology, treating it as a science in itself.

The volume is divided into three sections. The first deals broadly with the principles of medical climatology, and describes its close connection with physics, meteorology, ethnology, geography, pathology, etc. Earth, air, water, sun, etc., in their influence upon climate are successively discussed. This section also contains interesting remarks on the influence of race and of geographic position upon disease, and a chapter upon the classification of climates. The second section treats of "The Therapeutics of Climate in relation to Disease," each group of diseases being considered in turn. There is no attempt made here to describe individual health resorts and their adaptation to special diseases. Particular attention is justly given to the climatic treatment of phthisis, and there are valuable comparative statistical tables of the results of treatment at different places. The influence of climate upon other respiratory diseases, heart disease and affection of the liver, kidneys, etc., is also considered.

The third section is devoted to a description of special climates and localities. It is here that we have to make our only criticism. Of course, to give a full description of all health resorts would make a volume far too large for practical purposes, and the author has very properly, as he says, "made the effort to present as many new facts as possible about useful but comparatively unknown resorts," and has described very briefly those regarding which the literature is already ample. Yet it seems to us that almost too much space is given to American health resorts at the expense of those in other parts of the world. Although so many of these have already been described by others, yet the reader of this volume may know little, if anything, about them, and may be turning to it for information; in fact, he may not know where else to look. It is, therefore, greatly to be hoped that in a second edition Dr. Solly will elaborate this portion of the book, and will append a list of references to the literature bearing upon the subject in which fuller details may be found than the compass of a single volume allows.

But this criticism is not at all in the line of condemnation; it is merely a suggestion whereby a valuable work may be made still more valuable. Dr. Solly's book is a very distinct addition to medical climatology—a useful book which should be not only in the hands of every physician with whom rests the important decision regarding the destination of a patient about to leave home in search of health, but in the possession of all those also who have the praiseworthy desire to acquaint themselves with the principles of that important subject, Climatology.

**SEPTIC CONDITIONS OF THE INFANTILE ALIMENTARY CANAL.** By F. W. FORBES ROSS, M.D. Pp. viii, 138. London: The Rebman Publishing Co., 1896.

THIS little book is a step in advance in the understanding and treatment of the diarrhea and constipation met with so frequently in infants and children. The author

regards the whole alimentary canal as an organic unity, not as a series of parts which are independent in function and therapeutic needs. He sees two causes for the ordinary disturbances—one the result of chemic, the other the result of septic changes. The first mentioned he thinks of less importance than, or as preliminary to, the second. Naturally, therefore, he gives most of his attention to these septic conditions.

The task is really one of the greatest difficulty, and should not, as is here the case, be looked at almost wholly from the clinical view-point. Ever since the appearance of Escherich's work on a similar subject we have recognized the great complexity of micro-organic life in the alimentary canal, as well as the extreme diversity of its main and by-products. Dr. Ross has a good working idea of this, but his elaboration of it is hardly final. His book is earnest and hopeful, but merely preliminary.

He is liberal in his use of drugs, and favors the free administration of intestinal antiseptics, practically ignoring the recognized value of gastric and intestinal lavage. His treatment is apt at times to be somewhat complex, and he holds to some methods which many practitioners do not regard so highly. He believes in the use of artificial pepsin and in the utility of hydrochloric acid; he thinks that there is "nothing so important in the successful treatment of these conditions as the rational and moderate use of opium," and advocates the use of boiled milk. On the other hand, he gives good directions for the care of the utensils of feeding and the proper methods of collecting and handling milk. In an appendix he includes a formulary and method of preparing infant foods.

**ATLAS DER KLINISCHEN UNTERSUCHUNGSMETHODEN NEBST GRUNDRISS DER KLINISCHEN DIAGNOSTIK.** VON DR. CHRISTFRIED JACOB. Munich: J. F. Lehmann, 1897.

THE fifteenth volume of Lehmann's hand atlases is devoted to the methods and elements of clinical diagnosis. It contains 182 illustrations, 68 being lithographed plates. The blood, the urine, and the feces are shown in their various reactions, the colors being very faithfully reproduced. These are followed by plates showing the normal limits of percussion and their modifications in disease. The various diseases of the heart, lungs, liver, and some of the other abdominal organs are ingeniously portrayed, but we doubt their great value as didactic agents. The accompanying text is clear and modern. The book is handsomely made.

**INTERNATIONAL CLINICS, A QUARTERLY OF CLINICAL LECTURES.** Edited by JUDSON DALAND, M.D.; J. MITCHELL BRUCE, M.D., F.R.C.P., and DAVID W. FINLAY, M.D., F.R.C.P. Vol. I., seventh series. Philadelphia: J. B. Lippincott Co., 1897.

THE present volume corresponds in point of interest and merit to those hitherto published. It contains clinical lectures on therapeutics, medicine, neurology, surgery, gynecology and obstetrics, ophthalmology, laryngology and its allied branches, and dermatology. The contributors are all well-known clinical teachers, and the lectures are, as usual, beautifully illustrated.